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EDITED BY

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FELLOW OF THE PHILADELPHIA COLLEGE OF PHYSICIANS; MEMBER OF THE
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TO READERS AND CORRESPONDENTS.

All articles intended for the original department of this Journal must be communicated to it *exclusively*. The simultaneous transmission of the same article to several journals, would seem to be indicative of the spirit of advertising rather than of a desire to advance our science, and places the editor in a false position, leading to the suspicion that he presents to his readers, as original, articles which cannot be strictly so considered.

The following works have been received:—

A System of Surgery, Theoretical and Practical, in Treatises by Various Authors. Edited by T. Holmes, M. A. Cantab. Assist. Surg. to St. George's Hospital, and to the Hospital for Sick Children. Vol. IV. London, 1864. (From the Editor.)

A Manual of Practical Hygiene, prepared especially for Use in the Medical Service of the Army. By Edmund Parkes, M. D., F. R. S., Prof. of Military Hygiene in the Army Medical School, &c. &c. &c. London: John Churchill & Sons, 1864. (From the Author.)

Practical Observations on the Hygiene of the Army of India: including Remarks on the Ventilation and Conservancy of Indian Prisons; with a Chapter on Prison Management. Illustrated with woodcuts. By Stewart Clark, M. R. C. S. Eng. Inspector General of Prisons, Northwest Provinces, India. London: Smith, Elder & Co., 1864. (From the Author.)

Therapeutics and Materia Medica. A Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History. By Alfred Stillé, M. D., Professor of Theory and Practice of Medicine in the University of Pennsylvania, &c. &c. &c. Second edition, revised and enlarged. In two volumes. Philada.: Blanchard & Lea, 1864. (From the Publishers.)

A System of Surgery: Pathological, Diagnostic, Therapeutic, and Operative. By Samuel D. Gross, M. D., Professor of Surgery in Jefferson Medical College, Philadelphia, &c. &c. Illustrated by over 1300 engravings. Third edition, enlarged and carefully revised. 2 vols. Philadelphia: Blanchard & Lea, 1864. (From the Publishers.)

Diphtheria: its Nature and Treatment; with an Account of its Prevalence in Various Countries. By Daniel D. Slade, M. D. Being a Second and Revised Edition of an Essay to which was awarded the Fiske-Fund Prize of 1860. Philadelphia: Blanchard & Lea, 1864. (From the Publishers.)

Lectures on Venereal Diseases. By William A. Hammond, M. D. Philadelphia: J. B. Lippincott & Co., 1864. (From the Publishers.)

A Comprehensive Medical Dictionary, containing the Pronunciation, Etymology, and Signification of the Terms made use of in Medicine and the Kindred Sciences. With an Appendix comprising a Complete List of all the More Important Articles of the Materia Medica, arranged according to their Medicinal Properties; and also an Explanation of the Latin Terms and Phrases occurring in Anatomy, Pharmacy, &c.: together with the Necessary Directions for Writing Latin Prescriptions, &c. &c. By J. THOMAS, M. D., Author of the System of Pronunciation in Lippincott's Gazetteer of the World. Philadelphia: J. B. Lippincott & Co., 1864. (From the Author.)

Gunshot Wounds and other Injuries of Nerves. By S. WEIR MITCHELL, M. D., G. R. MOREHOUSE, M. D., and W. W. KEEN, M. D., Acting Assistant Surgeon U. S. A. Philadelphia: J. B. Lippincott & Co., 1864.

A Manual for the Medical Officers of the United States Army. By CHARLES R. GREENLEAF, M. D., Assistant Surgeon U. S. A. Philadelphia: J. B. Lippincott & Co., 1864. (From the Publishers.)

The Book of Prescriptions, containing 3000 Prescriptions, collected from the Practice of the most Eminent Physicians and Surgeons, English, French, and American; comprising also a Compendious History of the Materia Medica, Lists of the Doses of all Officinal or Established Preparations, and an Index of Diseases and Remedies. By HENRY BEASLEY, Author of the Druggist's Receipt Book, &c. Philadelphia: Lindsay & Blakiston, 1865. (From the Publishers.)

The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age, and Advanced Life: considered in their Physiological, Social, and Moral Relations. By WM. ACTON, M. R. C. S., &c. &c. From the last London edition. Philadelphia: Lindsay & Blakiston, 1865. (From the Publishers.)

A Practical Treatise on Pulmonary Tuberculosis: embracing its History, Pathology, and Treatment. By HORACE GREEN, M. D., &c. &c. &c. New York: John Wiley, 1864. (From the Publisher.)

Outlines of Surgical Diagnosis. By GEO. H. B. MACLEOD, M. D., F.R.C.S.E. New York: Baillière Brothers. (From the Publishers.)

The Army Surgeons' Manual, for the Use of Medical Officers, Cadets, Chaplains, and Hospital Stewards: containing the Regulations of the Medical Department, all General Orders from the War Department, and Circulars from the Surgeon-General's Office, from January 1, 1861, to July 1, 1864. By WM. GRACE, of Washington, D. C. New York: Baillière Brothers, 1864.

Medical Logic: an Introductory Lecture to the Medical Department of the University of Michigan. Session 1863, &c. By S. G. ARMOR, M. D., Professor Inst. Med. and Mat. Med. Detroit, 1864. (From the Author.)

Address Introductory to the Twenty-second Annual Course of Lectures in Rush Medical College. By DE LASKIE MILLER, M. D., Professor of Obstetrics and Diseases of Women and Children.

A Memorial of John C. Dalton, M. D. An Address delivered before the Middlesex North District Medical Society, April 27, 1864. By JOHN O. GREEN, M. D., Lowell. Cambridge, 1864.

Recent Progress in Materia Medica. An Address delivered in the Massachusetts Medical College, Boston, at the Opening of the Medical Lectures of

Harvard University, November 2, 1864. By Edward H. Clarke, M. D., Prof. Materia Medica. Boston, 1864. (From the Author.)

Glaucoma: its Symptoms, Diagnosis, and Treatment. By P. D. Keyser, M. D. Philadelphia: Lindsay & Blakiston, 1864. (From the Author.)

Transactions of the Medical Society of the State of New York, for the year 1864. Albany, 1864. (From Dr. G. W. Bradford.)

Transactions of the Medical Society of the State of Pennsylvania, at its Fifteenth Annual Session, held in Philadelphia, June, 1864. (From the Society.)

Transactions of the New York Academy of Medicine. Observations on Trichina Spiralis. By John C. Dalton, M. D. New York, 1864.

Proceedings of the Nineteenth Annual Meeting of the Ohio State Medical Society, held at the Ohio White Sulphur Springs, June 21 and 22, 1864. Cincinnati, 1864. (From Dr. E. B. Stevens, Secretary.)

Quarterly Summary of the Transactions of the College of Physicians of Philadelphia, from February, 1863, to April, 1864, inclusive. Philadelphia, 1864.

Proceedings of the Academy of Natural Sciences of Philadelphia, September, October, 1864.

The following Journals have been received in exchange:—

Revue de Thérapeutique Médico-Chirurgicale. Par A. Martin-Lauzer, M. D. P. Nos. 18, 19, 20, 22, 23, 1864.

The British and Foreign Medico-Chirurgical Review. October, 1864.

Guy's Hospital Reports. Edited by Samuel Wilks, M. D. Third Series. Vol. X. London. October, 1864.

Medical Times and Gazette. September, October, November, 1864.

British Medical Journal. Nos. 188, 189, 190, 191, 192, 193, 194, 1 95, 196 197, 198, 199, 200, 201, 202, 203, 1864.

The Medical Mirror. August, September, October, November, 1864.

The Dublin Quarterly Journal of Medical Science. August, 1864.

Edinburgh Medical Journal. September, October, November, 1864.

The Glasgow Medical Journal. October, 1864.

Canada Medical Journal. Edited by G. E. Fenwick, M. D., and F. W. Campbell, M. D. October, November, 1864.

Canada Lancet. Edited by W. E. Bowman, M. D. September, 1864.

Medical and Surgical Review. [Australian.] May 7, 21, June 7, 21, July 7, 21, 1864.

The Boston Medical and Surgical Journal. Edited by S. L. Abbot, M. D., and J. C. White, M. D. October, November, December, 1864.

The Cincinnati Lancet and Observer. Edited by E. B. Stevens, M. D., and J. A. Murphy, M. D. October, November, 1864.

The St. Louis Medical and Surgical Journal. Edited by M. L. Linton, M.D., and F. W. White, M. D. September and October, 1864.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. October, 1864.

Ohio Medical and Surgical Journal. Edited by the Professors of Starling Medical College, Ohio. September, 1864.

Buffalo Medical and Surgical Journal. Edited by J. F. Miner, M. D. Oct., 1864.

The Chicago Medical Journal. Edited by De Laskie Miller, M. D., and E. Ingals, M. D. October, 1864.

The Pacific Medical and Surgical Journal. Edited by V. J. Fourgeaud, M. D. September, October, 1864.

The San Francisco Medical Press. Edited by Henry Gibbons, M. D., and R. B. Cole, M. D. October, 1864.

The American Journal of Pharmacy. Edited by Wm. Procter, Jr., Prof. Pharmacy in Philadelphia College of Pharmacy. November, 1864.

The American Druggists' Circular. October, November, December, 1864.

The American Journal of Science and Arts. Edited by Profs. B. Silliman, B. Silliman, Jr., and J. D. Dana. November, 1864.

The Sanitary Commission Bulletin. October, November, December, 1864.

The Sanitary Reporter. September, October, November, 1864.

Communications intended for publication, and Books for Review, should be sent, *free of expense*, directed to Isaac Hays, M. D., Editor of the American Journal of the Medical Sciences, care of Messrs. Blanchard & Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Messrs. Trübner & Co., Booksellers, No. 60 Paternoster Row, *London, E. C.;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay. We particularly request the attention of our foreign correspondents to the above, as we are often subjected to unnecessary expense for postage and carriage.

Private communications to the Editor may be addressed to his residence, 1525 Locust Street.

All remittances of money, and letters on the *business* of the Journal, should be addressed *exclusively* to the publishers, Messrs. Blanchard & Lea.

☞ The advertisement-sheet belongs to the business department of the Journal, and all communications for it should be made to the publishers.

To secure insertion, all advertisements should be received by the 20th of the previous month.

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Clinical Observations on Functional Nervous Disorders. By C. Handfield Jones, M. B., &c. pp. 585. London, 1864. 153
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  1. Proceedings of the Nineteenth Annual Meeting of the Ohio State Medical Society, held at Ohio White Sulphur Springs, June 21st, 22d, 1864. 8vo. pp. 94.
  2. Transactions of the Medical Society of the State of Pennsylvania, at its Fifteenth Annual Session, held in Philadelphia, June, 1864. 8vo. pp. 627.
  3. Transactions of the Medical Society of the State of New York, for the year 1864. 8vo. pp. 503. 179

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XXIII. A Comprehensive Medical Dictionary, containing the Pronunciation, Etymology, and Signification of the Terms made use of in Medicine and the Kindred Sciences. With an Appendix, comprising a Complete List of all the More Important Articles of the Materia Medica, arranged according to their Medicinal Properties. Also, an Explanation of the Latin Terms and Phrases occurring in Anatomy, Pharmacy, etc.; together with the Necessary Directions for Writing Latin Prescriptions, etc. etc. By J. Thomas, M. D., etc. 8vo. pp. 704. Philadelphia: J. B. Lippincott & Co., 1864. 208

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XXV. A Manual for the Medical Officers of the United States Army. By Charles R. Greenleaf, M. D., Assistant Surg. U. S. A. 12mo. pp. 199. J. B. Lippincott & Co., 1864. 209

XXVI. Diphtheria: its Nature and Treatment; with an Account of the History of its Prevalence in Various Countries. By Daniel D. Slade, M. D. Being a Second and Revised Edition of an Essay to which was awarded the Fiske-Fund Prize of 1860. 8vo. pp. 166. Philadelphia: Blanchard & Lea, 1864. 210

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XXVII. A System of Surgery. By James Miller, F. R. S. E., Professor of Surgery in the University of Edinburgh, &c. &c. 8vo. pp. 1387, with index. Edinburgh: Adam and Charles Black, 1864. 211

XXVIII. The Diseases of the Ear: their Diagnosis and Treatment. A Text-Book of Aural Surgery, in the Form of Academical Lectures. By Dr. Anton Von Tröltsch, Aural-Surgeon and Lecturer in the University at Würzburg, Bavaria. Translated from the German, and Edited by D. B. St. John Roosa, M. D. Illustrated with wood engravings. 8vo. pp. 254. New York: W. Wood & Co., 1864. 211

XXIX. Outlines of Surgical Diagnosis. By George H. B. Macleod, M.D., F. R. C. S. E., Fel. Fac. Phys. and Surg. Glasgow; Lecturer on Surgery Anderson's University; Surgeon to the Glasgow Royal Infirmary, and the Lock Hospital; Late Senior Surgeon Civil Hospital, Smyrna, and General Hospital in Camp before Sebastopol; Mem. Corr. de la Soc. de Chir. de Paris; and Author of "Notes on the Surgery of the War in the Crimea." Reprinted from advance sheets. New York: Baillière Brothers, Broadway, 1864. 213

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THE
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ART. I.—*On Epidemic Cerebro-Spinal Meningitis, or Spotted Fever, with Cases.* By JOHN A. LIDELL, M. D., Surgeon U. S. Vols.

A VERY formidable disease, designated by some as "*spotted fever,*" and by others as "*epidemic cerebro-spinal meningitis,*" has recently attracted a good deal of attention in professional circles. Of this, the pages of the leading medical journals of this country bear ample testimony. Besides, it has, within a few months past, been the theme of discussion at the meetings of some of the most influential and important of our medical societies; for example, the Philadelphia College of Physicians, and the New York Academy of Medicine. And, of a verity, no one can justly doubt that a disease so sudden in its attack, so rapid in its progress, so fatal in its results, and about which we really know so little, as the one under consideration, is worthy of all the attention which the best minds in the profession can bestow. It is also a subject which challenges the earnest attention of the humbler labourers in the cause of science and humanity; and, actuated by this belief, the writer desires to place the history of the following cases on record, as a contribution, although but a small one, more especially to our knowledge of the pathological anatomy of this obscure, erratic, and formidable disorder.

It should be premised, however, that these cases occurred recently among the inmates of Stanton General Hospital, Washington, D. C., that they occurred in portions of the hospital widely separated from each other, and that no relation by contact, whatever, can be traced between them. The first, in point of time, appeared in ward No. 8, July 28, the second in ward No. 3, July 31, and the third in the hospital guard-house, August 14. For purposes of description, the second case in the order of time will be presented first, because its general features are more clearly defined than those pertaining to either of the others. It should be stated further, that these are the only cases of this disorder which have ever appeared at this hospital.

CASE I. *Cerebro-Spinal Meningitis.*—Private John Davis, Co. E, 8th Vermont Volunteers, 28 years old, and of a scrofulous diathesis, was admitted to Stanton General Hospital July 26, 1864, having an attack of intermittent fever, quotidian in type, and moderate in severity. He stated that, until recently, he had been serving in Gen. Banks' army, Department of the Gulf. Quiniæ sulph. gr. v, every six hours, was prescribed for him, and a full diet was allowed. Under this treatment he improved rapidly, and his chills ceased after the first day. The quinia was continued, and he bade fair to return to duty speedily.

July 31, *morning.* He remained in bed, complaining of loss of appetite and of feeling rather weak; his countenance expressed a good deal of anxiety, but there was no heat of skin, nor disturbance of the pulse, nor coating of the tongue. He said that, about midnight, he had been suddenly seized with great restlessness as he lay in bed. This lasted about twenty minutes, but he did not sleep till towards morning. He had no pain. The officer of the day being called, prescribed fluid extract of valerian for him in the night. At the morning visit he was also free from pain. The quinia was continued, and he was directed to keep his bed.

He got on well through the day until about 5½ o'clock P. M., when he was again attacked suddenly with great restlessness, and with irregular convulsive movements, closely resembling those presented by certain cases of hysteria; he became delirious, and uttered loud, shrill screams, at the same time tossing himself about very much, and throwing himself out of bed, unless restrained by the attendants; pupils dilated and symmetrical; no strabismus; pulse 100, and full, but there was no unnatural temperature of the skin; respirations about 14; no vomiting; could not be made to protrude his tongue nor to swallow anything.

Treatment.—Ice was applied to the head and the spine, a sinapism was placed on the epigastrium, and a large turpentine enema was administered; the enema was repeated in an hour, but without effect in either case. No remedy was administered by the mouth, for the power of deglutition appeared to be lost.

At 7 o'clock, the pupils continued dilated; the respirations were 12; the skin was moist; the pulse 90; the restlessness diminished; but still he could not swallow.

At 9 o'clock, pupils dilated; respirations 12, but more laboured; pulse 90, and weaker; less restlessness and less screaming. After this, the screams were gradually replaced by low moans. He sank gradually into stupor, and died comatose at midnight, about 24 hours after the beginning of the attack, and about 6½ hours after its character was fully developed. Towards the last he was bathed in perspiration.

Autopsy ten hours after death.—Muscular system well developed; adipose tissue rather scanty; suggillations well marked in depending portions of cadaver; rigor mortis strong; scattered over the back of the neck and the dorsal aspect of the shoulders are 25 or 30 *dark purple spots*, circular in shape, somewhat raised above the surrounding skin, with a well-defined margin, and varying in size from a mustard-seed to a pea. On incising them, it is found that they present an infiltration of dark-coloured blood in all the layers of the skin, and, to some extent, in the connective tissue beneath. The spots are not arranged in groups. On superficial view, they presented considerable resemblance to leech-bites.

Cranium.—While sawing off the calvarium, and, subsequently, while removing the brain, *a large quantity of serum* coloured with blood flowed away. It amounted in all to at least *six ounces.* Glandulæ Pacchioni unusually numerous, large, and adherent, for a subject of only 28 years. A moderate quantity of limpid serum beneath the visceral arachnoid membrane, especially about the vertex. The arachnoid has lost its transparency and become more or less opaque (opacified), especially in the same locality. A moderate amount of limpid *serum* in the *ventricles.* The choroid plexus in the fourth ventricle is thickened, pale-red in colour, and presents a striking resemblance to a lamina of pale, flabby granulations, but the choroid plexus in the other ventricles presents no abnormity. The cerebrum, cerebellum, pons Varolii, and medulla oblongata were carefully examined. They were moderately congested throughout, but presented no other abnormal appearance.

Spinal canal.—On sawing through the posterior vertebral arches (laminæ), and removing them so as to open the spinal canal almost its whole length, it was seen that the theca vertebralis was distended, or, at least, well filled with serum, notwithstanding the large amount of cerebro-spinal fluid which had escaped while examining the brain. On laying the theca open, it was found that the spinal arachnoid membrane had lost its smooth, shining appearance, and was opacified (pearl-coloured), throughout its whole extent. The subarachnoidean bloodvessels were everywhere intensely congested (active hyperæmia). The cerebro-spinal fluid was noticed to contain some thin, white flocculi in the lumbar region, but otherwise it was limpid. The structure of the spinal cord did not present any abnormity.

Thorax.—No pleuritic adhesions; both lungs strongly congested (*passive hyperæmia*); an *apoplectic extravasation* of blood, as large as a walnut, was found in the middle lobe of the right lung, at the fissure between it and the superior lobe; there was a large cicatrix at apex of left lung, and beneath it, a vomica inclosed by a thick membranous wall, and containing a quantity of whitish, cheese-like substance. The vomica was evidently undergoing contraction.[1] The heart exhibited rather more than the normal quantity of fat on its exterior, but in other respects was sound. The heart clots were small. The *blood* was much more *fluid* than natural, and a very large quantity of it flowed into the cavity of the chest on dividing the great vessels, while examining the thoracic organs. The abnormal fluidity of the blood constituted a marked feature of the case.

Abdomen.—The liver and intestines presented no abnormity. The kidneys were intensely congested, especially about the bases and cones of the pyramids, and presented a very dark-red, or almost brown colour. The bladder was rather more than half full of amber-coloured *urine*, which was found to be heavily loaded with *albumen*, on testing with heat and nitric acid.

Remarks.—The symptoms developed during life, and the pathological conditions revealed by the autopsy, show conclusively that the case belongs to the same category as those which have been described by numerous observers under the name of *cerebro-spinal meningitis*. On this point there is no room for a reasonable doubt. It is necessary, however, in taking a comprehensive view of this case, to observe that the pathological lesions were not confined to the organs located in the cranium and the spinal canal, but that the condition of the *blood* also was *markedly abnormal*; for it showed hardly any tendency to coagulate, remaining *preternaturally fluid* everywhere; while, at the same time, it manifested a very *strong tendency to extravasate*, which was denoted by the *pulmonary apoplexy* and by the *cutaneous purple spots*. It is, therefore, evident that the meningeal inflammation did not constitute the whole of the case, by a great deal, and that the morbid process, or the disease itself, was not restricted to the cerebro-spinal axis and its meningeal investment. This view of the case is rendered still more probable by the fact that the kidneys were strongly congested, and that an abundant quantity of albumen was found in the post-mortem urine.

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[1] This was a tuberculous cavity in process of being cured, and it was not only interesting *per se*, but also as occurring in a subject whose death was ultimately occasioned by another disorder.

As already stated, the patient died comatose. It might also be remarked, with perfect propriety, that he died asphyxiated, and in the following manner: The respiration speedily sank to 12 per minute, while the pulse remained 90, and full. The heart continued to act energetically, and to force the blood with abnormal rapidity into the lungs, while, at the same time, the respiratory movements were failing from increasing paralysis of the muscular apparatus by which these movements are accomplished. The blood, therefore, failing to be sufficiently decarbonized in the lungs, stagnated in those organs, and in this way was produced that passive hyperæmia, or pulmonary engorgement with venous blood, which was witnessed at the autopsy.

This motor paralysis of the muscles of respiration had a central origin, and was doubtless occasioned directly by mechanical compression of certain important nervous centres. The inflammatory process in the cerebro-spinal meninges was characterized by a very copious and rapid exudation of serum; so copious and rapid, indeed, that it might be styled an extravasation without any manifest impropriety. This serous fluid was, for the most part, poured out into the cavity of the arachnoid membrane. Some of it, indeed, was effused into the ventricles and into the sub-arachnoidean spaces, but the rest, and by far the largest part of it, was effused as already stated. This copious exudation of serum (about 6 ounces were found at the autopsy) in the cavity of the arachnoid membrane would tend to compress the brain and spinal cord alike. However this may be, it is certain that the organs located at the base of the brain and at the upper end of the spinal cord are very susceptible to pressure applied in this way. Thus it happened that the *functions of many nervous centres* both sensitive and motor were impaired, and finally *arrested* by mechanical compression; and prominent among them was the *respiratory tract* of the medulla oblongata. Thus it happened that the patient lost the power to swallow from paralysis of the muscles of the pharynx, and the ability to breathe from paralysis of the muscles concerned in respiration; and he finally sank into stupor or coma, firstly, because the cerebral hemispheres were compressed, and, secondly, from the stupefying influence of the unaerated and highly carbonized blood which was circulating in the cerebral vessels.

The early death in this case must, therefore, be attributed directly to the rapid exudation of a large quantity of serum into the cranio-vertebral cavity. Now, it is this wonderfully rapid and profuse outpouring of serum, which especially distinguishes the so-called epidemic cerebro-spinal meningitis from all other forms of inflammation of the membranes of the brain and spinal cord. For example, meningeal inflammation produced by violence exhibits an exudation of plastic lymph or of pus, accompanied, for the most part, with but a small amount of serous effusion; and even in the cases of the so-called tubercular meningitis, the effusion of serum, although copious, always takes place much more slowly, and on that account life may sometimes be prolonged to an indefinite period, even when the amount of the effusion happens to be very great.

Very rapid and profuse effusion of serum is, therefore, a distinguishing feature of the kind of inflammation of the cerebro-spinal meninges now under consideration, and indicates that we must look beyond the membranes of the brain and spinal marrow, into the state of the system at large, if we expect to raise ourselves up to a comprehension of the subject. It stamps this form of meningitis as having a peculiar character, dependent, in all probability, upon a peculiar constitutional condition, which renders it as much a specific disease as erysipelas or rheumatism. The peculiarity of the erysipelatous dyscrasia is, that it predisposes to diffuse cellulo-cutaneous inflammation; of the rheumatic dyscrasia, that it induces fibro-articular inflammation; and the peculiarity of the unnamed dyscrasia which we are now considering is, that it is often associated with a meningeal inflammation, which is characterized by a sudden and copious effusion of serum.

CASE II. *Cerebral Meningitis with very Rapid Effusion.*—Private John Minsberger, Co. I, 90th Pennsylvania Volunteers, 40 years old, and sound in constitution, a patient at Stanton General Hospital, convalescent from resection of the left elbow-joint, had recovered so far that the wound of operation was healed, and he appeared to be in good health in every respect, having regained his flesh and strength.

On the morning of July 28th he arose, dressed himself, and went out to the pump for a drink of fresh water, as was his daily practice, and then returned to his ward, being, to all appearance, in usual health.

About 6 o'clock he was suddenly seized with a great pain in his back, between the shoulder-blades. He said it felt as if somebody was pressing a bar of hot iron into his backbone. A mustard plaster was applied, and he obtained speedy relief. He had no chill, and the attack appeared to begin without warning. After it was over, he got up and walked about the ward.

About 7 o'clock the paroxysm of burning pain returned; the sinapism was again applied, and he got relief in ten or fifteen minutes. He appeared to be sick at the stomach, and tried to vomit. His strength appeared to be good. He declined food, and had no thirst. This paroxysm was somewhat longer than the other. After it was over, he fell into a profuse perspiration, and slept an hour or two.

About 10 o'clock he was seized the third time with the same intense burning pain in the dorsal region, which he referred to the backbone. This paroxysm was much severer than the others, and he cried out for anguish. It also lasted much longer. There were no convulsive movements. The medical officer in charge of him, Acting Assistant Surgeon W. B. Dick, U. S. Army, reported the case to me, stating that there did not seem to be much the matter with him during the intervals between the paroxysms, and I advised cupping of the affected part.

At 11 o'clock, on raising him up in bed for the cups to be applied, he was seized with the fourth paroxysm. He fell over on the shoulder of an attendant at once, exclaiming, "Oh, such pain!" and immediately became unconscious, as if in a syncope. At the same time his face became deathly pale, his eyes fixed, the muscular system relaxed, the radial pulse weak and fluttering, and the respiration was suspended, or, rather, he breathed at very long intervals only. I was hastily summoned, and in a few minutes saw him. The pallor of the face and lips had then given place to the livid hue of asphyxia; the eyes were open, fixed, and glassy, the right pupil was dilated, while the left was contracted; the muscular system was completely relaxed; no radial pulse was perceptible, and he took afterwards only three or four long, sighing inspirations, with long intervals between each of them, notwithstanding that ammonia was applied to the nostrils, and Marshall Hall's method of artificial respiration was faithfully tried. He breathed the last time about 11½ o'clock. His lips and face were then very livid. He had no thirst and no unnatural warmth of skin during any part of the five and a half hours his sickness lasted. He did not exhibit petechiæ or any other kind of spots.

Autopsy by Assist. Surg. George A. Mursick, U. S. Vol., six hours after death.—Body well developed; no emaciation; no rigor mortis. Upon removing the calvarium, about 4 oz. of blood and serum flowed out. The veins and sinus of the brain were congested with fluid blood. There was a moderate amount of subarachnoid effusion over the hemispheres, and the ventricles contained about an ounce of serum. The spinal canal was opened from the occiput to the sacrum. The spinal cord and its membranes appeared healthy, and there was no congestion of them.

Thorax.—The lungs were intensely congested with venous blood; otherwise healthy. There were about 8 oz. of serum contained in both pleural cavities. The pericardium contained about 2 oz. of fluid. The heart was slightly hypertrophied; the mitral valves were slightly thickened, the tricuspids were a good deal thickened by a new deposit between the folds of the endocardium. The aortic and pulmonary valves were normal. There was no insufficiency of any of the valves.

Abdomen.—All the abdominal viscera were healthy, except the kidneys; they were in a state of acute congestion, and of a bright maroon colour. The urine contained albumen; it was obtained at the autopsy.

Blood.—There was no coagulation of the blood. It remained fluid everywhere, was dark in colour, and flowed freely wherever an incision was made into the body.

Remarks.—While perusing the account of the *post-mortem* examination of this case, it is probable that the reader has not failed to notice a strong similarity between the anatomico-pathological lesions presented by it and by the preceding case. In both of them a large amount of serous effusion was found in the cranio-spinal cavity, the lungs were engorged with venous blood, the kidneys were congested, the urine contained albumen, and the blood presented a remarkable fluidity in every part of the body. It will thus be perceived that the morbid process was essentially the same in both instances, and that, however much they may differ in other and minor particulars, it was the same disease which brought both of these men to an untimely death.

Among the points of dissimilarity we may notice, first, that in the case under consideration the effusion of serum upon the cerebro-spinal axis and into the ventricles of the brain was much more sudden and rapid than in the preceding case. Indeed, it was so sudden and rapid as to produce "shock." It caused him to fall over on the shoulder of an attendant, and immediately become unconscious, as if in a syncope. At the same time a deathly pallor overspread his countenance. Subsequently his face became livid, in consequence of pulmonary congestion, and in a short time he expired, the respiratory function having failed the first of all. Here is presented before us the whole of that group of fatal symptoms which Dr. Watson and others have described under the title of serous apoplexy. Now, the term serous apoplexy is, doubtless, well enough, so far as it goes. It expresses exactly the way in which death took place in this case, but it gives no idea whatever concerning the morbid process at large, which occasioned the abnormal fluidity of the blood, the albuminous urine, and the tendency to serous extravasations, which were developed in this patient. It signifies that the patient was stricken down, as by a blow, from sudden effusion of serum upon the great nervous centres, and thus denotes or represents a peculiarity of the particular instance of disease, rather than the disease itself, considered as an entity.

Another point of marked dissimilarity was exhibited in the clinical history. Minsberger complained, at short intervals, of suffering intense pain. He expressed himself as feeling, at times, as if a bar of hot iron was being pressed into his backbone, but had no convulsive movements. Davis, on the other hand, did not complain of pain, but had convulsive movements. But, as heretofore stated, the essential features of both cases present a great similarity to each other.

CASE III. *Meningitis.*—Private Simeon Bond, 37th Co., 2d Battalion V. R. C , aged 25, and of feeble constitution, was admitted to Ward No. 7, Stanton General Hospital, Acting Assistant Surgeon W. B. Dick, U. S. Army, on Sunday evening, August 14, 1864, from the quarters of the hospital guard, to which he belonged. He had been unwell for several days, complaining of debility and loss of appetite, and the officer of the day had excused him from duty on that account. He had not been confined to bed. The orderly sergeant thought him to be slightly out of his head on the day before he entered the hospital (Saturday), and noticed that he ate nothing.

When admitted to the hospital, he was feverish, thirsty, and sick at the stomach, but did not vomit; said he had headache, and felt sick and weak; did not have chills, nor complain of any other pain; pulse about 90. Prescribed the neutral mixture and aconite. That night he was restless, and slept but little.

Monday, 15*th*. He was light-headed, and did not seem to realize where he was; he wanted to get up and steal away, but was quiet withal. His head was hot, his eyes somewhat injected, his tongue furred, and his pulse 95 and stronger. Ordered the ice-bag to the head, a brisk purge (pil. cathartic. comp. No. 3), and spiritus mindereri in combination with vin. antimonial. and nitric ether. A dose of morphia was administered in the evening, and he passed a better night. He had pain in the head, but none whatever in the spine or any other part of the body.

Tuesday, 16*th*. Patient lies in a stupor, from which, however, he can be roused without much difficulty; pupils somewhat dilated, and symmetrical; eyes more injected; pulse about 80, and full; respiration slower than natural, but deep and regular; has mild delirium, and complains of headache, but sinks back into the stupor again as soon as the disturbance ceases; has no spasms of any kind. Ordered the hair to be cropped short; emplast. cantharid., 4 by 6, to nape of neck; sinapisms to the epigastrium and to the inner side of his thighs; and quinia in full doses. His bowels had moved freely.

He did not improve; the stupor grew more profound, and he died comatose that night, about 11 o'clock, something more than forty-eight hours after he entered the hospital.

No autopsy, for the body was sent away next morning at daylight, for interment at a distance, before it could be conveniently examined. No spots on his body were noticed. The febrile movement was well marked. He did not have any convulsions. There were no symptoms whatever indicative of a spinal lesion. The symptoms all pointed to a meningo-cerebral lesion.

Pathology.—On looking into the recent literature of the subject, the writer finds that the anatomical lesions revealed by *post-mortem* examination of the cases which he has narrated bear a striking resemblance to, or, indeed, are almost identical with, those presented by Dr. Jewell's case of "*spotted fever*," which is reported in the Transactions of the Philadelphia College of Physicians (vide *American Journal of the Medical Sciences*, pp 130, 131, July, 1864). This patient was a male, aged nine years, and died comatose after a sickness of but forty-eight hours' duration. He had vomiting, headache, dilated pupils, convulsive movements, and petechiæ during life. At the autopsy, made twenty-four hours after death, the vessels of the dura mater were found to be markedly congested with fluid blood; there was a copious effusion of serous fluid in the subarachnoid spaces and in the ventricles of the brain; there were about two ounces of serum in the pericardium; heart-clots small, very black, softish, and not unlike currant-jelly. The kidneys were strongly congested. The blood in the cardiac veins, in the mesenteric veins, and, indeed, in every part of the body examined, was abnormally fluid. There were some purpurous spots here and there upon the mesentery; and on incising one of the cutaneous petechiæ, it was found to consist of an ecchymosis in the substance of the true skin, and not of a mere effusion beneath the cuticle.

The *pathological lesion* most constantly presented by the disease under consideration appears to be that of the blood. It was exhibited in a marked degree by the several cases cited, and presented a singular uniformity in all of them. No matter whether the disease ran its course in five and one-half hours or two days, the blood retained a remarkable fluidity and a dark-red colour after death in both alike. Not so, however, with the lesion of the cerebro-spinal meninges. In Case I. we found that the membranes of both the brain and the spinal cord were involved in the inflammatory process. In Case II. the *post-mortem* traces of inflammatory action were confined to the brain alone. In Case III., also, the inflammatory lesion, as denoted by the clinical history, affected the brain and its membranes alone. In Dr. Jewell's case, just now referred to, both the brain and the spinal marrow were involved.

But this remarkable disorder may even march on to a fatal termination without the occurrence of inflammation (active hyperæmia) in any part of the cerebro-spinal meninges, as happened in Dr. Levick's case of "*spotted fever*," which is reported in the Transactions of the Philadelphia College of Physicians (vide *American Journal of the Medical Sciences*, p. 136, July, 1864). This patient was but eighteen months old, and died after being sick but fourteen hours. The case exhibited a very strong hemorrhagic tendency. The autopsy was made twenty-five hours after death, and showed that the surface of the body was everywhere mottled; that there were vibices on the knees, and petechiæ on the legs; that the vessels of the dura mater were filled with dark fluid blood; that the substance of the brain and medulla oblongata was natural in appearance and consistence; *that there was no effusion in the ventricles, and the most careful examination failed to detect the slightest evidence of inflammatory exudation.* As in the other cases to which reference has been made, the blood presented a remarkable fluidity in every part submitted to examination. The lungs contained a large quantity of fluid blood. The left ventricle of the heart contained two soft clots, each about the size of a pea. The right ventricle did not contain any clots, and the blood therein was thin and fluid, looking not unlike claret wine. Numerous extravasations of blood were also found in various parts of the body. A large ecchymosis was discovered beneath the pericranium, near the sagittal suture. The intestines were everywhere dotted with minute extravasations of blood, both on their outer and inner surface. Similar ecchymoses were found on the bladder, in the kidneys, and on the diaphragm. In all the other cases we found an abnormal exudation of serum associated with inflammatory action in some part of the cerebro-spinal meninges. In the case of this infant we did not find any cerebro-spinal inflammation whatever; but, in place of exudation of serum, there were numerous and remarkable extravasations of the blood itself, discovered in various parts of the body. It is not improbable that many cases of the so-called purpura hemorrhagica, especially those occurring during the infantile period of life, and being accompanied with febrile movement, belong, in reality, to the same category as the disease under consideration. Indeed, the writer himself is inclined to believe that he has seen some cases of this sort in time past.

Is the so-called "*spotted fever*" a form of *typhus petechialis?* Are they cognate diseases? It is true they bear considerable resemblance to each other in two important particulars, viz., both of them are blood diseases, and both of them are apt to be associated with cutaneous ecchymosis (petechiæ). But here the resemblance ends. If we examine their clinical history with a critical eye, we find that they differ from each other as widely as typhoid fever differs from measles. For example, spotted fever often runs its course in a few hours; typhus requires at least several days. Spotted fever is frequently attended with convulsive movements; typhus is never so accompanied. Spotted fever patients often die very suddenly and unexpectedly from coma and asphyxia, the *modus operandi* of which has already been explained; typhus patients do not die in this way. The eruption in spotted fever frequently appears on the first day, as it did in the case of Davis, also in the case of the young lad reported by Dr. Jewell, and in the case of the young child reported by Dr. Levick; while in typhus the eruption does not appear till the end of a week or more from the commencement of the prodromic symptoms. Thus clinical observation shows not only that these two diseases are not identical, but that they are in reality entirely distinct from each other.

What then is the true nature of the disorder under discussion? This question does not admit of a complete answer in the present state of our knowledge; but at the same time, as has already been shown in this paper, there is good reason to believe that the so-called spotted fever, or epidemic cerebro-spinal meningitis, is a *specific disease* dependent upon a specific dyscrasia; that it is also a *blood-disease*, in which respect it is analogous to all other dyscrasic disorders; and that it is often accompanied with a sudden and copious exudation of serum into the cranio-vertebral cavity, or with extensive extravasations of the blood itself in various parts of the organism; *vide* the pulmonary apoplexy in the case of Davis, and the numerous and extensive ecchymoses in Dr. Levick's case.

In the course of the discussion on cerebro-spinal meningitis before the New York Academy of Medicine, April 20, 1864, Professor Clark stated that he "was inclined to doubt whether the right name had been found for the disease; in some cases the brain and spinal cord were involved in the inflammation, and so far the term cerebro-spinal meningitis was correct enough; but in other cases the inflammation was limited to the brain; while in still other cases the brain and cord escaped altogether, and the inflammation spent its force upon the pericardium, pleura, and even upon the lungs. That being the case, the disease, in his opinion, was due to a condition of the system in which there was a tendency to inflammation, and the inflammation might show itself in one part of the body or another, dependent upon circumstances which we cannot at first appreciate." (Vide *American Medical Times*, May 14, 1864, p. 237.)

The results of our investigations strongly corroborate the views of Prof. Clark. For we found in Case I. that the disease manifested itself locally, by producing an inflammation of the arachnoid membrane of both the brain and the spinal cord; in Case II. that the disease expended its force mainly on the cerebral arachnoid alone; in Case III. that the disease made its advent by impairing first the functions of the brain as the organ of the mind, subsequent to which fatal cerebral meningitis supervened, the spinal marrow being not involved in any way; and in Dr. Levick's case, that the disease expended its force in producing extravasations of blood beneath the pericranium, the diaphragmatic pleura, in the coats of the intestines, in the kidneys, and on the bladder, there being no inflammatory action whatever about the brain, spinal cord, or any other organ in the body. The conclusion is irresistible that the disease itself consists of a pathological condition of the system at large, whereof the various local lesions enumerated above are but the accidental manifestations. It has also been conclusively shown that this morbid condition of the system is accompanied by a strongly marked pathological condition of the blood, the most striking feature of which is, that its coagulability is almost entirely destroyed.

Is this disorder communicable from one person to another? On this point the evidence furnished by our observations is entirely negative in character. As already stated, each of these cases occurred in a distinct portion of the hospital, and no relation by contact can be traced between them. The disease did not spread to the other patients occupying the same ward, or the same quarters, in a single instance. But this fact does not by any means prove the disease to be uncommunicable, for it should be borne in mind that these hospital wards are as thoroughly ventilated, clean, and wholesome as our present knowledge of hygiene enables us to make them. It cannot be expected that diseases which are not strongly contagious will spread in such a place and under such circumstances. At the same time the writer does not doubt that, under circumstances favouring its development, the disease may radiate from the localities in which it first appears, and thus conform to one of the laws regulating the spread of infectious disorders in general; and he also does not doubt that, under favouring circumstances, it may be communicated from one person to another.

The cases which came under our observation were probably produced by some kind of an epidemic influence, which we are not able to appreciate with our present lack of knowledge concerning this disease, as well as the occult causation of epidemic diseases in general. The *influenza* did not prevail at the time; indeed, there was not a case of influenza then in the hospital. This fact is mentioned because some have been inclined to think that spotted fever is only an exalted form of influenza.

While speaking of the epidemic origin of the disease, as it appeared at Stanton Hospital, it is worthy of remark that our first case, in point of time, occurred July 28th, and terminated fatally in five and one-half hours; that our second case occurred three days afterwards, July 31st, and terminated fatally in twenty-four hours; and that our third case died August 16th, after three days' sickness. This progressive diminution in the severity of type of the disorder from the first to the last case is either a remarkable coincidence, or (what is more probable) it shows that the special zymosis which produced the disease in question was also progressively diminishing in point of intensity.

Treatment.—Candour compels us to state that the remedial measures employed in our cases were not productive of much benefit. Davis lost the power of deglutition so early that the range of medication in his case was very much restricted. Even the stimulating enema failed to operate, apparently from paralysis of the muscular coat of the large intestine; and when it was repeated a short time afterwards there was still no effect, in all probability for the same reason. There is no reason to believe that the ice-bags applied to his head and spine did any good. In the case of Minsberger the counter-irritation (sinapisms) seemed to afford some relief from the excruciating pain between his shoulder-blades; but, at the same time, it is not by any means certain that his paroxysms of pain were either shortened in duration or moderated in severity by these applications. In the case of Bond neither the brisk purge, nor the aconite, nor the antimony, nor the blister on the neck appeared to have any effect in retarding the onward progress of the disorder. The only remedy which seemed to benefit him was morphia, which, administered in the evening, enabled him to pass a better night. But notwithstanding this, he also, like the others, finally sank into stupour and died comatose. This analysis of the treatment employed in these cases has been made for the purpose of illustrating an instructive part of their clinical history.

All of these patients died from effusion of serum upon some part of the cerebro-spinal axis. Now, any plan of treatment, to have been successful, must either have prevented the effusion of the serum, or caused its absorption prior to the occurrence of fatal compression of the nervous centres. The remedies which we employed did not accomplish either of these desirable results. The question next arises whether there is any therapeutic agent at our disposal suitable for such a purpose. In the opinion of the writer we have such a remedy, and it is opium. It has for a considerable time been well known to many persons that opium, especially when administered in large doses, possessed a marvellous power in the way of arresting exudation from serous membranes. This property of opium has probably been most strikingly exhibited in the treatment of peritonitis with a suppurative tendency; for example, puerperal peritonitis; but its efficacy has also been fully proved in the management of inflammations of the thoracic serous membranes. But at a time like the present, when opium or its chief alkaloid is so extensively and successfully employed in surgical practice for the cure of traumatic peritonitis, it is not necessary to say any more on this point. And, entertaining these views, the writer is fully determined to give opium a fair trial in the treatment of spotted fever, if it should ever be his misfortune to again encounter that formidable disorder.

But the employment of opium in the treatment of epidemic cerebro-spinal meningitis is no new thing. Dr. Miner long ago strongly recommended its use in large doses. He said: "A few cases imperiously required half an ounce of the tincture of opium in an hour, or half a drachm in substance in the course of twelve hours, before urgent symptoms could be controlled; and even some cases required a drachm in the same time. All those patients whose symptoms were promptly met with opium invariably recovered." (Vide *Miner on Typhus Syncopalis.*)

According to Dr. Hartshorne: "The only treatment in which, after considerable experience, Boudin placed any confidence was that in which opium was used remedially. An *opiate sleep* was often followed by convalescence." (Vide *American Journal of Medical Sciences*, p. 94, July, 1864.)

Not long since Dr. Walter F. Atlee treated ten cases of epidemic cerebro-spinal meningitis at St. Vincent's Home, in Philadelphia, with gratifying success, although nine of them were young children from two to four years of age. The treatment consisted in the application of irritants to the back, and in the administration of opium, the patients' strength being supported at the same time with brandy, wine-whey, and essence of beef. (*Op. cit.*, p. 95, July, 1864.)

Some have expressed a great deal of confidence in the efficacy of sulphate of quinia administered in large doses. But according to our experience, however useful this remedy may be for the removal of a malarial complication, it exerts but little if any influence upon the disease itself. For in the case of Davis the disease appeared in a very severe form while he was taking five grains of quinia three times a-day, and in the case of Bond large doses of that remedy did not produce any perceptible effect whatever.

Stanton General Hospital, Washington, D. C., October 1, 1864.

ART. II.—*Remarks on the Pathological Anatomy of Osteomyelitis, with Cases.* By H. ALLEN, M. D., Asst. Surgeon U. S. A.

MILITARY surgeons have doubtless observed, during the present war, the liability of gunshot injuries of bone, to be followed by severe symptoms. In addition to secondary hemorrhage and gangrene, which are so apt to attack any wounds in those labouring under a scorbutic taint and malarial influences, injuries to a bone expose to the dangers of osteomyelitis—to pyarthrosis when the fractured or resected region is in the neighbourhood of an important joint—and to many risks of death from prolonged suppuration and pyemia.

It would not be unsafe to assert that, all things being equal, there is a direct ratio between the severity of a case of gunshot wound and the extent of injury to bone. But, although the chances of recovery are generally proportionate to the slightness of the wound of bone, yet it sometimes follows that, from injuries primarily insignificant, fatal terminations follow. Thus, cases of tetanus have accrued from impacted balls in shafts; osteomyelitis from mere scratches on the periosteum of long bones; and diploeitis, and subsequent cerebral abscess result from a simple bruising of the cranium from a conoidal ball.

The chief danger, however, is the occurrence of osteomyelitis. This disease was originally detected in stumps, and was particularly noticed in cases of amputation of the thigh and arm, where the phenomena of the disorder could in part readily be observed during life. Cases of fracture and resections have also furnished examples of the lesion.[1] Yet the medulla of a long bone may become seriously involved even when the bone has not been injured, and the presence of such inflammation lie unsuspected during the life of the patient. Indeed, this is very generally the case; and it is the chief object of this paper to demonstrate the relations which the position of the wound bears to the degree and seat of this complication.

To this end I have divided my subject into the following heads:—

(1). Those cases in which the affected bone has not been touched, but becomes secondarily involved by diseased action in the soft parts; and (2), those in which the affected bone has been primarily injured by a missile.

(1). In this section a simple form of inflammation of the medulla can be demonstrated without any apparent complication of the osseous structure. For the sake of convenience in description, I have distinguished the cases by which it is illustrated by those (*a*), following simple flesh wounds in the vicinity of the affected bone, and those (*b*), subsequent to injuries received some distance from the seat of inflammation ; as, for example, an osteomyelitis of femur following amputation of leg, osteomyelitis of humerus from gunshot wound of forearm.

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[1] The literature of this subject is confined, so far as I know, to a few papers by French observers, devoted to descriptions of the appearances presented in cases of amputation and resection. See an article by M. Reynaud, "De l'inflammation du tissu medullaire des os longs" (*Archiv. Gén. de Médecine*, June, 1831, p. 161); also a Monograph by M. Valette, "Mém. sur l'osteomyelète des Amputés" (*Rec. du Mémoir. Méd. et Chir. Milit.*, 2d ser., vol. xvi., 1855, 230).

(*a*) *Cases of medullitis following flesh wounds.*

Case I. *Gunshot wound of right hip: "pyemoid" symptoms; yellowish skin. Duration* 19 *days.*—Private Jos. J. Wood, Co. C, 4th Maryland, aged 33, was admitted into Carver General Hospital, Washington, D. C.,[1] May 14, 1864, having been wounded in the battle of Spottsylvania Court House, May 10. A conoidal ball had entered three inches posterior and slightly inferior to the right hip-joint, and lodged. The patient walked off the field of action, and had the bullet removed before admission. Did well until the 20th instant, when his appetite commenced failing; and on the morning of the 21st, had a decided chill, followed by fever. Complained of pain in limb of corresponding side to wound, especially in the ankle and knee.

By the 24th instant the conjunctivæ and skin were of a yellowish colour. Body was continually bathed in a copious, clammy sweat ; vomiting now became a marked symptom, nothing retained. No delirium, hiccoughing, or diarrhœa. Died June 2.

Autopsy.—Rigor mortis moderate ; body yellowish, much emaciated. Affected side normal in size and appearance; toes of right leg very slightly everted. Edges of wound ragged and shelving, extending beneath the glutei muscles, and forming a cavity in the buttock about the size of a teacup, which was filled with an old blackish clot. No pus was found. The muscles of thigh were not inflamed. Femoral vein filled with a grayish-red, partially disorganized clot, but contained neither pus nor any fluid resembling it. Walls of vein not thickened.

Internal organs.—Spleen 9½ in. by 6 in., of an intense blackish-blue colour, rather soft. Other organs quite healthy.

Upon sawing open the femur longitudinally the entire interior was found to be intensely inflamed. The medulla was of a dark chocolate colour and of firm consistence. The cancelli both at head and at condyles were of a deep crimson hue. No evidence of suppuration could be demonstrated. The walls of shaft were compact, not injected, nor was the periosteum perceptibly thickened or inflamed.

Case II. *Gunshot wound of right buttock; no "pyemoid" symptoms. Duration* 10 *days.*—Amos White, Sergeant Co. E, 3d Vermont, aged 34, was admitted May 24, 1864, having been wounded at the battle of Spottsylvania Court House, May 12, 1864. Conoidal ball entered lower part of right buttock, passed downward and inward and lodged near scrotum. Ball extracted on field. Had a hemorrhage before admission, no vessel tied. The case was complicated with severe and exhausting diarrhœa.

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[1] When not otherwise stated, all the cases are supposed to have been observed at this hospital, to the surgeon in charge of which, Surgeon O. A. Judson, U. S. V., I am indebted for many courtesies.

Died June 3. The diarrhœa was doubtless the exciting cause of death. Had no vomiting, sallow-hued skin, hiccoughing, or delirium.

Autopsy.—Appearance of limb and wound healthy. Some burrowing of pus, however, toward the thigh. Femoral vein contained a soft blackish clot without *pseudo pus.*[1]

Internal organs.—Spleen enlarged (not measured). Mucous membrane of intestines very much congested; at lower third ileum, agminated glands were enlarged, and several ulcers of the solitary glands were seen. Other organs healthy.

Upon opening the femur, the head of the bone and upper third medulla was found to be highly inflamed. The remainder of the bone was quite healthy. No periostitis or ostitis.

CASE III. *Gunshot wound of right thigh; pyarthrosis of knee-joint; no pyemia. Duration* 33 *days.*—Private Andrew C. Brown, Co. D, 49th Pennsylvania, aged 28, admitted May 14, 1864, having been wounded at the battle of Spottsylvania Court House, May 10. A conoidal ball passed through lower third right thigh anterior to femur from without inward. The joint was not opened. The bone not injured. Had been treated in a temporary hospital in Fredericksburg, where his wound had been neglected. Pus was allowed to burrow up and down the thigh, and finally to open into the knee-joint from above beneath the great extensor tendon. Patient had no appearance of pyemia, no sweating, chills, or yellowish tinge of skin. Had a profuse diarrhœa towards close, with delirium. Died June 16

Autopsy.—Rigor mortis slight; emaciation marked; limb undermined with pus from middle third of the thigh to within three inches of condyles; joint contained a large quantity of pus; cartilages were eroded; no fracture detected. The femoral vein was perfectly healthy; clot small, blackish, not adherent.

Internal organs all healthy.

Femur, when sawn open, was found to be inflamed at upper third. Cancellated structure at condyles, and in head of tibia slightly stained from contact with pus. Tibia healthy.

CASE IV. *Gunshot wound of right thigh; pyarthrosis of knee-joint; no pyemia. Duration* 23 *days.*—Private Joseph Coad, Co. F, 3d Maine, aged 35, admitted May 26, 1864, having been wounded in the battle of Wilderness, May 8. A conoidal ball entered inner surface of lower third right thigh from before backwards. It was thought at the time to be a flesh wound of but little importance. Indeed, the surgeon who diagnosed the case, considered a scalp wound on right side of head to have been the more serious injury, and had entered it as such upon bed-card of patient. Soon after admission, a profuse diarrhœa set in. This rapidly reduced him, and proved to be a dangerous complication.

On the 20th instant his condition was as follows: Anorexia, pneumonia of right side; no hiccoughing, nor delirium; colour of skin natural; did not complain of either wound; no pus discovered in knee-joint; diarrhœa profuse. Patient died June 18.

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[1] I have adopted this name to express the fluid which is found in and about a disintegrating vein clot, frequently when no phlebitis is present. It has every appearance of pus, but none of the anatomical peculiarities of that fluid can be demonstrated in it.

Autopsy.—Rigor mortis slight, emaciation great; right knee-joint distended with pus; thigh swollen, whiter than rest of body; pus found extending up along the tract of great vessels. Femoral vein contained a whitish cylindrical solid clot in lower third of vessel, with a small tæniform clot in upper third. Walls of vein somewhat thickened, though not apparently inflamed.

Internal organs.—Splenification of third lobe, right side; liver slightly fatty; other organs healthy.

The femur, when sawn open, revealed a grayish-slate hue in the cancellated structure of the bone, both at the head and at the condyles. The upper third of medulla below the tract of puriform discoloration was greatly inflamed, while that portion extending thence to the condyles was perfectly healthy. Running across the cavity of the bone at its lower half were four osseous bridges, at intervals of about an inch from one another, between which the medulla presented a natural appearance.

(*b*) *Cases of medullitis following injuries some distance from the seat of inflammation.*

CASE V. *Amputation at the left knee-joint; "pyemoid" symptoms; blanched skin. Duration* 14 *days.*—Private Andrew Hoseid, Co. I, 4th Maryland, aged 27, admitted May 14th, 1864, having been wounded at battle of Wilderness, May 7th, 1864. A conoidal ball had entered outer side of left heel, passed inwards and upwards, and was cut out on inner side of calf midway to knee; it had fractured astragalus and internal malleolus. The ball had been cut out previous to admission. Amputation was deemed necessary, and the limb was removed at the knee, retaining condyles of femur entire. Patient did very well until 17th inst., when the submaxillary lymphatics commenced swelling. This became so marked by the 21st inst. that it was with considerable difficulty that any kind of food could be administered. There was no trismus. On the 22d patient had a severe chill, followed by copious sweating. Stump very unhealthy; no vitality in flaps. No vomiting; no delirium; but marked anorexia. Died May 28th.

Autopsy.—Rigor mortis marked; no emaciation; stump open. Soft parts indurated, especially up along the course of the great vessels. The entire length of femur was surrounded with pus; periosteum thickened. Femoral vein healthy, contained a softish black clot.

Internal organs healthy; femur, when sawn open, revealed extensive grayish suppuration at upper third; healthy at lower two-thirds.

CASE VI. *Gunshot wound of right popliteal space; pyarthrosis of knee-joint; no pyĕmia. Duration* 36 *days.*—Private G. Sylvia, Co. H, 45th Pennsylvania, aged 25, admitted May 26th, 1864, having been wounded at the battle of Wilderness, May 6th, 1864. A conoidal ball entered the right popliteal space from without inwards, and emerged on the inner side without striking the bone. The history of the case was imperfectly recorded, but it was ascertained that the patient commenced sinking from time of admission; that he had severe and repeated chills, followed by copious sweating. I saw the patient several times; he lay with the affected leg flexed on thigh, and thigh on body. The thigh was swollen and painful. The knee-joint greatly distended by pus, and toward the close of the case had opened spontaneously, and condyles of femur left exposed. He had no appearance of pyemia. Anorexia and insomnia were marked symptoms toward the close. He died June 11th.

Autopsy.—Rigor mortis marked; colour of skin natural; much emaciation. Limb enormously swollen; the ligaments of joint were entirely destroyed; the articulating surfaces of both tibia and femur were exposed to view, and greatly discolored by the contact of pus. Both surfaces were entirely denuded of cartilage, and that of the tibia was much roughened; the cancellated structure being partially disintegrated. The muscles of both leg and thigh were flabby. The entire limb was undermined with pus. Great vessels healthy.

Internal organs all healthy. Spleen measured 6 inches by 4 inches.

Upon sawing open the *tibia* the upper third was puriform, of a grayish slate colour, and contained in centre a distinct circumscribed abscess of about the size of a marrowfat pea. Below this point the medulla was for a slight distance somewhat congested; the remaining portion being healthy. The *femur*, on the contrary, in addition to the purulent cancelli of condyle, presented an intense medullitis throughout the entire length of medullary cavity, being more marked at head than elsewhere. The walls of either bone were not thickened or vascular.

Case VII. *Gunshot wound of the popliteal space; pyarthrosis of knee-joint; pyemia; yellowish skin. Duration* 14 *days.*—Private Henry Crosby, Co. E, 1st Michigan, aged 33, admitted June 7th, 1864, having been wounded in the Battle of Coal Harbor, June 3d. A conoidal ball passed directly through popliteal space without fracturing either bone. He commenced to show symptoms of pyemia by the 15th inst., and rapidly sunk with all the symptoms of that disease. He had four chills in course of disease, followed by sweating, anorexia, diarrhœa, and insomnia; but no hiccoughing. Skin and conjunctivæ saffron hued. Died June 17th.

Autopsy.—Rigor mortis marked; emaciation extreme. Limb of affected side of normal appearance, excepting in neighborhood of knee-joint where the usual swelling was evident. Upon opening the joint a large quantity of pus was evacuated; the cartilages partially denuded; the plicæ vasculosæ of a dingy red colour, very vascular and much thickened. The parts around the popliteal vessels were of a blackish-blue colour. The wound had not communicated with the joint. The femoral vein contained a large clot, which, at the popliteal region, and thence up to commencement of Scarpa's space, was semi-solid, being whitish and fibrinous on top, and softened and blackish at base, without any evidence of disintegration being present; whilst at the upper third and onward to Poupart's ligament the clot was more fibrinous, partially disintegrated, and bathed in pseudo-pus; walls of vein not thickened.

Internal organs.—Pleurisy of left side with copious effusion; small abscess on free border second lobe. Large cheesy deposit in corresponding lobe right lung. Liver flabby, slightly fatty. Spleen pultaceous, dark-bluish colour; measured 6 in. by 4½ in.

Upon opening femur the medulla was moderately inflamed at upper third, entirely healthy lower two-thirds. No puriform appearance demonstrable.

Case VIII. *Gunshot wound of the right popliteal space; pyarthrosis of knee-joint; "pyemoid" symptoms; blanched skin. Duration* 9 *days.*—Private Mathew Boyle, Co. C, 155th New York, aged 49, admitted June 11th, 1864, having been wounded in Battle of Coal Harbor, June 3d. A conoidal ball had struck the inner surface of right thigh, immediately above and posterior to the inner condyles of femur, and passed out obliquely through the popliteal space without fracturing the bone. Patient was in a dying condition when admitted. Died June 12th.

Autopsy.—Rigor mortis very slight; no discoloration of skin. Knee-joint enormously swollen and filled with a dark yellowish pus; articular surfaces partially eroded. No fracture was discovered. Femoral vessels and *internal organs* healthy.

Femur when opened revealed an active medullitis in upper two-thirds of cavity; the lower third was somewhat congested. Posterior wall of femur thickened and decidedly vascular, its sawn surface was of a delicate red colour and covered with darkish-red punctiform spots.

Remarks.—It will be observed in the perusal of the above cases that no symptoms indicative of the presence of the inflammation were recorded. Nor, indeed, were any recognized; and it was not until the affected tissue had been exposed to view upon the dissecting table that the existence, much less the degree, of inflammation was made known. It is, doubtless, on this account—the disease secluding itself, as it were, from our observation—that no account of this variety of osteomyelitis has hitherto been given. In every specimen, which I have examined, the affected tissue was of a very firm consistence, so that if a section of it were removed, it would retain the shape of the medullary cavity. The colour varied from a deep crimson to a dusky chocolate-red, passing off into the healthy tissues by delicate shades of red and orange.

The inflammation was uniformly present in the cancellated structure at head of bone, and the degree of its severity was proportionate to its extent, thence along the axis. In specimens removed from adolescents the diseased condition was occasionally interrupted by a well defined line, indicating the point of junction of the diapophysis with the shaft, the extent of the medullary matter beyond which would frequently retain its yellow colour. Although the redness was always present in the upper part of bone, it was by no means evenly distributed. In some specimens the pale or slightly congested medulla appeared between patches of an intense red, and occasionally spots of inflammation would extend downward along the wall of the cavity, thus giving the section an irregular and variegated appearance. Beyond this, again, some distance, the medulla would be paler and firmer than natural, and contain much less oily matter. Rarely an isolated spot of inflammation would appear near the lower extremity of the bone, either developed from a slender ossicle or lying directly upon the wall of the cavity proper.

Nor was the degree of inflammation proportionate to the severity or position of the original injury. Thus, in Case I., a flesh wound of buttock, without suppuration, produced an active medullitis of the entire tract of femur, while in Case III. the presence of an immense suppurating surface, immediately around the bone, created but a very moderate degree of inflammation in medulla.

In no instance could it be proved that the affection proceeded from the seat of injury; and in one marked instance (Case IV.), the structure of the condyles of the femur was soaked with puriform matter; suppurative medullitis was found at the upper third of bone, while between the two grayish points a tract of perfectly healthy medulla extended.[1] In my attempt to explain this somewhat singular phenomenon it occurred to me that the medium of transmittal of the inflammatory action might be found on the periosteal and endosteal surfaces; and I instituted careful examinations of the periosteum of the different specimens, but found no evidences of an abnormal condition therein. I have not been enabled to demonstrate any such membrane as an endosteum. Case VIII. is the only example among my notes of an involvement of *bone* proper in medullitis of this kind.

As already stated, no symptoms were present by which the inflammation could be detected. No more pain was experienced in the affected limb than could be attributed to the condition of the parts immediately around the wound.

What share this inflammation bore in producing fatal results in the above cases, is, to a certain degree, conjectural. Excluding the medullitis, sufficient cause was present in each case to have ended in death, excepting, perhaps, the extensive inflammation seen in Case I. The question naturally suggests itself, therefore—May not this form of medullitis frequently occur in cases of wounds that eventually recover? Or would it be going too far to affirm that moderate medullitis at the head of a long bone always follows a gunshot wound in the soft parts of the vicinity? Since in Case II., where debility from a previous hemorrhage, followed by an exhausting diarrhœa, was the predisposing cause of death, would not the medullitis have existed in the femur had these untoward symptoms not appeared?

(2). *Cases in which the affected bone had been primarily injured by a missile.*

The phases of osteomyelitis, as instanced in the following cases, are presented for the purpose of contrasting them with the foregoing, and to further illustrate the fact that the degree of medullitis appears to bear little relation to the condition of surrounding parts, or nature of disabling wounds.

(*a*) *Cases treated by amputation.*

CASE IX. *Amputation of left arm; no pyemia. Duration 34 days.*—Private G. Waldo, Co. B, 1st Massachusetts Artillery, age 28, admitted May 24th, 1864, having received a gunshot wound in the battle of Spottsylvania C. H., May 19th. A conoidal ball entered the lower third of left forearm from before backwards, creating a compound comminuted fracture of lower third of radius. May 19th, several fragments of bone removed. Amputation of the arm above the elbow was resorted to on June 2d, mortification having set in in forearm. There were several patches of somatic death seen—the largest entirely covering the dorsum of hand. Patient did well until June 5th, when he was seized with a chill followed by lancinating pains in the left side of chest, which were quickly followed by symptoms of effusion. June 15th, pain in side continues, with dyspnœa and cough. Diarrhœa complicated the case from the 16th inst. No discoloration of skin. Died June 22d.

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[1] It is not a little curious that this tendency for inflammation to leap to the head of the bone finds a parallel in the degree of disintegration of the vein clot. I have, on several occasions, observed this tendency. In Case VII., while the clot in vein in and around the popliteal space (the seat of injury) was not affected, that portion immediately below Poupart's ligament was disintegrating and bathed in pseudo-pus.

Autopsy.—Rigor mortis scarcely detected; emaciation; extremity of stump perfectly healthy in appearance. Axillary vein contained a small, cylindrical, unwashed clot, which was not adherent to the walls of vein. *Internal organs.*—The left lung was compressed with effusion from pleurisy. The pleural cavity of this side was filled with a yellowish, purulent fluid. The parenchyma of the lung was stained to the depth of about a line beneath the layer of lymph on its outer surface by a thin purulent fluid, which afterward proved to be true pus. The pigment cells in this juxta-pleural layer were very distinctly seen. The right lung was of a pale pink colour, dry and small; quite healthy. No abscesses were found in either. Liver and spleen healthy—the latter measured 4 by 3 inches. The other organs not examined.

Upon examining the bone the medulla was found protruding in a button like expansion from the sawn surface. Upon opening the humerus the interior was inflamed, of a uniform dusky red colour up to surgical neck. Above this point the section presented a varied appearance. The upper two-thirds of the head were healthy, excepting the outer posterior border, where at the line of the insertion of the capsular ligament, a narrow crescentic shaped patch of intense inflammation, tending to grayish suppuration, was seen. The lower third of head was very vascular, and toward the centre was quite inflamed. No thickening or other abnormal condition of the walls of the bone could be detected.

Remarks.—Immediately after the operation for amputation in this case, I sawed open the lower third of humerus in specimen. I found it inflamed throughout. There was no doubt that inflammation at the head of the bone existed at the time. The disease had evidently progressed very slightly, if any, after the date of operation.

CASE X. *Amputation of the left arm; pyemia; skin yellow. Duration 26 days.*—Private Peleg G. Randall, Co. D, 58th Massachusetts, age 27, admitted May 14th, 1864, having been wounded at the battle of Spottsylvania C. H., May 12th. A conoidal ball struck the lower third left forearm, fracturing the lower third of shaft of radius, and involving wrist joint. An attempt was made to save the hand, but amputation was finally resorted to on May 30th. But the soft parts had so far become involved by the delay that it was found necessary to amputate at upper third of arm. Pyemia set in on June 3d Had a slight hemorrhage on June 5th, which, however, was spontaneously checked. Patient died with every appearance of disease, June 7th.

Autopsy.—Rigor mortis not marked; no emaciation; stump presented a healthy appearance. Axillary vein was filled with a large, disintegrated clot. The walls of vein were not thickened. *Internal organs.*—Dry pleurisy was present on either side of chest, and both lungs were studded with cheesy nodules and abscesses—the so-called metastatic deposits—varying in size from a buckshot to a horsechestnut. Liver flabby, rather soft. Spleen very soft, measured 6 by 5 inches. Both organs contained numerous abscesses, which, in the latter organ, had excited a local inflammation in contiguous peritoneum. Upon opening the humerus a very moderate degree of inflammation was found to exist. The head was of a bright red colour around the edges, while a circular spot in centre of the cancellated structure presented a comparatively healthy appearance. The inflammation ran thence downward along the inner side of canal to the distance of two inches. An isolated spot of inflamed tissue was observed suspended, as it were, in the centre of canal at the lower third of bone, while the parts immediately around the sawn surface were of a darker shade of colour than elsewhere, and was continuous in a button-like protrusion of the medulla upon the surface of stump.

Remarks.—As in preceding case, the lower two-thirds of humerus were sawn open immediately after the limb was amputated, and the medulla was found inflamed.

CASE XI. *Amputation of the right forearm; pyemia; skin yellow. Duration* 16 *days.*—Private Everson Hall, Co. D, 1st Massachusetts, aged 31, admitted May 24, 1864, having received in battle of Spottsylvania Court House, May 19th, a compound comminuted fracture of both bones of right forearm. Amputation of upper third forearm was resorted to May 20, 1864. Had a chill June 4th. No detailed notes of the case were kept. Patient died of pyemia June 9th.

Autopsy.—Rigor mortis not marked. Emaciation moderate. Limb not swollen. Vein not examined.

Internal organs.—Pleuro-pneumonia left side; abscesses in both lungs. Other organs not examined.

Upon sawing open the bones of forearm, both ulna and radius showed suppurative medullitis at head. The upper third of shaft and head of humerus was also acutely inflamed; no suppuration, however, was detected.

CASE XII. *Amputation of the right arm; pyemia; skin yellow. Duration* 12 *days.*—Corporal John F. Fryer, Co. A, 53d Pennsylvania, aged 34, admitted June 11th, having received in battle of Coal Harbor, June 3d, a compound comminuted fracture of the lower third right humerus from a conoidal ball, for which the arm was taken off on field, June 5th. Upon admission the patient was very low, complained of great pain in stump, and had no appetite. No reparative changes had taken place in stump; the flaps were as cleanly cut as at time of operation. No medulla protruded from sawn surface of bone. On the 13th a hemorrhage occurred from a large muscular artery. During the operation for its ligation a thin grumous fluid was observed to flow from the sawn surface of bone. No bleeding again took place; but patient continued sinking. Skin was saffron-hued; slight vomiting occurred; and low delirium, with chills, supervened towards the close. No diarrhœa or hiccoughing was present. Died June 15th.

Autopsy.—Rigor mortis not marked. Emaciation extreme. Surface of stump black and fetid; no sloughing of flap had occurred. The end of bone was white and firm; no protrusion of the medullary substance was seen. The axillary vein was found to contain a small washed clot, but without the appearance of pseudo-pus in or about it. It was not adherent to wall of vein; nor did the latter show any evidence of inflammation.

Internal organs.—Liver large, extending entirely across the abdomen. Spleen 6½ by 11 inches; pultaceous. Other organs healthy.

Upon opening humerus, the medulla was found to have undergone circumscribed suppurative inflammation. The cancellated structure of the head of the bone was of an intense chocolate-red colour. In the centre an irregularly defined patch of a grayish slate colour was seen. Immediately beneath this, and extending downward beyond the surgical neck, was an area of a dark clot-like medulla, which was closely adherent to the wall of the cavity, and in the midst of which, and somewhat inclined toward the outer side, was seen a circumscribed abscess, about the size and shape of a grain of coffee. The entire medulla below this was intensely inflamed, and contained in the centre a large irregular sinus, lined with thick pus-stained walls, and connected the suppurative surfaces directly with the face of stump. The space between this sinus and the walls of the humerus was much discoloured, and around the sawn section assumed the blackish clot-like appearance noticed at neck of bone.

CASE XIII. *Amputation of the left thigh; "pyemoid" symptoms; skin blanched. Duration 4 months; from date of pyarthrosis 20 days.*—Captain E. W. Capps, Co. C, 15th Virginia Cavalry (rebel), age 30 (?), admitted into Lincoln General Hospital, Washington, D. C., October 21, 1863, having been wounded at Brandy Station, October 11. A conoidal ball had struck the upper third left leg, and passed directly through the spine of tibia from within outwards. Pyarthrosis of corresponding knee-joint supervened about the 1st of February, 1864, and the limb was amputated in consequence at the lower third of thigh, on the 8th inst. Patient rallied well after operation; but finally was seized by severe and frequently repeated chills, which exhausted him. Toward the latter part of his life his countenance assumed a blanched look of profound anæmia. There was no delirium, vomiting, or yellowish hue of skin or conjunctiva. A few days before death hiccoughing became a marked symptom. He died February 20th.

Autopsy.—Rigor mortis marked. Adipose tissue abundant. Limb was much swollen, and of a tallow colour. Upon dissecting out the vessels, the tissues of the thigh were found greatly indurated, especially along the course of the Hunterian tract. The interior of the femoral vein was filled with a solid black clot, which was firmly adherent to the walls of the vein. No disintegration noticed. The lower third of the vessel, that which had lain in contact with the suppurating surface of stump, was stained by a purulent fluid for about two inches from the patulous opening. A curious appearance was observed in one of the small branches of the profunda vein in the upper third of thigh. It presented the same general aspect seen in the patulous end of the femoral, and was filled with pseudo-pus.[1]

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[1] We have already stated in a note on page 36 the tendency for the upper third of clot in femoral vein to go on to disintegration prior to any such changes taking place in the lower portion. In the above observation we find that a small branch of a vein in the upper third of thigh underwent this change, while nothing similar to it was observed in the larger trunks. It is unfortunately a very tedious process to dissect out from a mass of indurated tissue the minute branches of a large vein. Were it less so we might discover many instances of this isolated dis-

Internal organs healthy.

Upon sawing open the femur the medulla throughout was found to be of a grayish-yellow colour, which was more intense at the region of trochanter than elsewhere. Numerous small abscesses, more or less elliptical, were arranged lineally down the central portion of medulla. The bone was not thickened or vascular. The periosteum, however, was inflamed, and at the lower two-thirds of specimen was readily stripped from the bone, where it presented the appearance of having been pulled away from the femur by the fibres of the muscles inserted upon it, after the manner so graphically described by M. Vallette, q. v.

Case XIV. *Amputation of the left arm; pyemia (?); skin yellow. Duration* 34 *days.*—Sergeant Isaac B. Lea, Co. H, 125th New York, aged 23, admitted May 19, 1864, having received a compound comminuted fracture of middle third of left humerus, at the battle of Wilderness, May 12th, for which the arm was amputated at upper third before admission. The patient did remarkably well, and the stump healed kindly. He imprudently, on the morning of June 2d, walked to Washington, a distance of a mile, exposed to hot sun. He was seized with a violent chill the following day, and pyemia was rapidly developed. He was delirious by the 5th instant. Sallow complexion and yellowish conjunctiva appeared by the 9th, with distressing hiccough. No diarrhœa; no vomiting. He died delirious June 15th.

Autopsy.—Rigor mortis very marked. Emaciation none. The muscles and skin of stump were found healthy. The axillary vein was filled with a grayish clot, and was surrounded by a large quantity of debris and pseudo-pus. The humerus, when opened, was found to be highly inflamed, and diffuse suppuration present through the entire length of fragment. Walls of medullary cavity healthy.

No examination of the *internal organs* was permitted.

Case XV. *Amputation of the right leg; pyarthrosis of knee-joint; no "pyemoid" symptoms. Duration* 10 *days.*—Private Wm. Love, Co. G, 16th Maine, aged 16, admitted May 14th, having received a compound comminuted fracture of both bones of right leg from a conoidal ball, at the battle of Spottsylvania Court House, May 10th. The limb had been amputated before admission, immediately below the knee-joint. By the 15th the flaps had entirely sloughed, leaving the sawn surface of tibia exposed.[1] Condition of patient very poor; countenance dusky; slight diarrhœa; and dry tongue. May 18th, had a severe chill, followed by an erysipelatous flush over knee-joint, and fluctuation. May 24th, has been vomiting for the last two days; gradual sinking. Died May 21st.

Autopsy.—Rigor mortis not marked. Emaciation extreme. Limb of normal appearance. Pus was found in knee-joint, and had burrowed up

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integration taking place. Should any of these little vessels burst from distension, would we not have in the focus of a collection of puriform matter thus created a correct solution for the formation of one variety of the metastatic abscess?

[1] It was now observed that a superficial exfoliation was going on, and a shell of bone, the shape and size of the end of tibia, was gradually being thrown off. This interesting process could be watched from day to day. By carefully lifting an edge of the sequestrum, the surface of living bone beneath could be seen, covered everywhere with roseate granulations.

the thigh around the femur nearly one-half its length. Femoral vein quite healthy. No pseudo-pus present.

Internal organs.—Spleen rather congested; measured 4 by 3 inches; of a dark purplish colour. No abscesses. Other organs healthy.

When the femur was sawn open the entire length of the medulla was seen to be inflamed. It was of a deep chocolate-red colour, and of clot-like consistency. No suppuration or grayish discoloration was visible. The bone was apparently healthy.

Remarks.—In this group it will be observed that the effect of an amputation upon a limb has little influence upon the character and extent of the inflammation. We still see the tendency of the medullitis to originate in the head of the bone, at some distance from the seat of operation; and, as shown in Cases XI. and XV., an extensive inflammation in the interior of a bone separated from the amputated region by a double synovial surface.

Inflammation had passed on to suppuration in four cases, viz., XI., XII., XIII., XIV.

In the event of this supervening it may become diffuse, when the affected tract will assume a uniform yellowish-gray colour; or it may be circumscribed, when small abscesses will appear scattered throughout the interior of the bone. These latter are generally of an elliptical form, averaging in size that of a grain of corn, and are bordered by a darkish layer of the surrounding medulla. They are generally isolated from one another, but occasionally unite, and, as shown in Case XII., may run together, so as to form a continuous sinus in the interior of medulla, which discharges pus upon the face of the stump. In the diffuse form little or no fluid can be demonstrated in the affected portions, while in the circumscribed each suppurating point contains a yellowish fluid. Upon microscopical examination I have never been enabled to prove the existence of pus in the former variety; but in the latter true pus-cells have occasionally been demonstrated. While the inflammation, as we have found, uniformly commences in the cancellated structure at the head of the bone, the points of suppuration do not always follow this rule. The diffuse form, it is true, is found in the head of the bone, if at all; but the circumscribed variety is more frequently met with at the upper third of the shaft, and extending thence downward. The two varieties appear to be generally distinct. I have seen but one specimen (Case XIII.) in which they blended. In Case VI. an abscess was seen in the cancelli of head of tibia, while the surrounding parts were of a grayish colour. But this discoloration I believe not to have been due to inflammation in the bone, but to a suppurative condition in the adjacent joint, the pus from which had permeated through the denuded patches on the articulating surface.

In no instance was any bad odour noticed in the specimens.

(*b*) *Cases treated conservatively.*

* *Compound comminuted fractures.*

CASE XVI. *Gunshot wound of the upper third of the left femur; not "pyemoid." Duration* 16 *days.*—Timothy O'Conner, Co. I, 56th Pennsylvania, age 35, admitted May 19th, 1864, having received a compound comminuted fracture of upper third left femur, from a conoidal ball, during the battle of the Wilderness, May 4th, 1864. On the second day after admission several splinters of bone were removed from limb. Patient did well until June 1st, when he commenced sinking. Had a chill on the 2d inst. Died on the 4th. No symptoms of pyemia present, other than the chill.

Autopsy.—Rigor mortis marked. No emaciation. Femoral vein filled with recent healthy blackish clot.

Internal organs.—Slight pleurisy left side thorax. Both lungs heavily congested, and were of a dull grayish colour. No abscesses, however. Spleen soft, placenta shaped, and of a dark red colour. It measured 7 by 5 inches.

Upon opening femur the upper fragment showed intense inflammation, the medulla being of a purplish red colour throughout. Periosteum not detached. Lower fragment perfectly healthy.

CASE XVII. *Compound comminuted fracture of the left humerus; pyemia; skin yellowish. Duration* 14 *days.*—Private Henry Phister, Co. I, 15th New York, aged 18, admitted May 26th, having been wounded at the battle of the Wilderness, May 6th, by a conoidal ball striking the middle third of left humerus and creating a compound comminuted fracture. An operation of excision of three inches of the shaft was performed prior to admission. The prominent symptoms in this case were excessive pain in affected limb; anorexia; chill on 28th inst. An attack of pleurisy supervened on the 30th inst. Skin then assumed a yellowish hue. No vomiting, or hiccoughing, delirium or diarrhœa. Died June 9th.

Autopsy.—Rigor mortis marked; no emaciation. Affected limb greatly discoloured. The incision for operation was five inches in length, and filled with granulations. Axillary vein showed no evidence of inflammation. Clot was firm, blackish, without disintegration.

Internal organs.—Double pleurisy; metastatic deposits in both lungs. Liver slightly fatty. Spleen measured 6 by 4 inches, very black and soft.

Upon sawing open the bone, medullitis was revealed in both fragments, being, however, more intense in the upper, and was especially conspicuous at head of bone. Local death of the medulla had taken place from either end to the extent of 1½ inch, and exactly corresponded to the amount of exfoliation which was taking place. Periosteum not detached above the line of exfoliation.

CASE XVIII. *Gunshot wound of the right leg; jaundice; pyemia. Duration* 19 *days.*—Private Jas. Dickerman, Co. G, 8th Michigan, age 28, admitted May 26th, having been wounded at the battle of the Wilderness, May 6th, a conoidal ball striking middle third right leg, from before backwards fracturing both bones. The prominent feature in this case was a complication with jaundice. He vomited bilious matter, and had obstinate constipation of bowels. The skin and conjunctivæ were highly icterode. June 6th, had a severe chill. Was delirious by the 11th inst., rapidly sank and died June 12th.

Autopsy.—Rigor mortis marked. Slight emaciation. The skin was of a deep yellow colour, which communicated itself to all the tissues of the body. Affected limb not swollen. The femoral vein was inflamed. The walls were thickened, and the internal surface presented several large, irregular, thickened whitish patches, their long diameters arranged parallel to the vessel. The vein contained a thick, black, curd-like clot; not disintegrated.

Internal organs.—Left lung healthy. Basal lobe of the right lung somewhat congested with metastatic deposit size of hen's egg. Liver "bronzed." Spleen 6 by 4 inches. Much congested.

Upon opening tibia there was found inflammation of the medulla in both fragments. It was slight in upper fragment; but very marked in lower, extending from the malleolus flush up to the line of fracture. The upper and lower fragment proper were separated by an irregular and partially necrosed segment. That portion of the medulla which lay upon this intermediate piece was shrivelled, of a grayish black colour, and tenaciously adherent to the bone. The anterior wall of tibia, both above and below, was much thickened and reddened, and Haversian canals enlarged. Fibula healthy. Periosteum of both bones neither softened nor detached.

Case XIX. *Compound comminuted fracture of the right humerus; pyemia. Duration 17 days.*—Private R. J. Bloomfield, Co. H. 116th Pennsylvania, age 18, admitted May 26th, having received a compound comminuted fracture of middle third, right humerus, during the battle of Spottsylvania C. H., May 18th. Did very well until June 6th, when a severe chill came on. From this time he sank, and died June 12th.

Autopsy.—Rigor mortis not marked; emaciation moderate; limb somewhat swollen. A large bed-sore over region of external epicondyle. Integument of axillary region and pectoral muscle of corresponding side of a bluish colour. Axillary vein contained a large soft whitish clot; healthy.

Internal organs all healthy, except the basal lobe of left lung, which contained a cheese-like deposit about the size of a chestnut.

Upon exposing the bone a collection of pus was found about seat of fracture and somewhat above it. When the humerus was sawn open the medulla of upper fragment was in a state of diffuse suppuration. The entire interior, from the head of bone to seat of fracture, was of a uniform yellowish-gray colour. The lower fragment was perfectly healthy; periosteum neither softened or detached.

Remarks.—Case XVIII. is a solitary illustration of medullitis existing in a greater degree in the lower than upper fragment. This was the only opportunity I have had of examining a fracture of the bones of leg after death, and I cannot come to any conclusion, therefore, as to the prevalency of the occurrence. It would certainly be a curious fact were it shown that the *lower* portion of the tibia should be inflamed after gunshot injuries involving the bones of leg, in the same manner as the *upper* portion of the femur and humerus after corresponding injuries.

I have remarked that in gunshot fractures of femur and humerus the upper fragments almost invariably present a larger necrosed surface than the lower. I think this can readily be accounted for on the ground that the medulla of the upper fragment is so constantly inflamed when the lower is frequently quite healthy. In the case of fracture of the leg, on the other hand, the tendency is for the lower fragment to yield the greater extent of exfoliation. It is probable that this is also due to the fact, as above stated, that in the case of the tibia the medulla of the lower fragment is more inflamed than the upper.

M. Valette places great stress upon the loosening of the periosteum about the end of inflamed bone. I have not been able to confirm this statement in every instance. It is more marked in amputation than in resections or fractures. This may be due to the fact that the muscular fibres have less opportunity to retract forcibly upon the periosteum when the continuity of the limb is preserved than when the axes of the muscles have been severed.

** *Graze shots of long bones.*

CASE XX. *Gunshot wound of the left arm; "pyemoid" symptoms; skin yellowish. Duration* 36 *days.*—Sergeant Jacob F. Thatcher, Co. G, 15th New Jersey, aged 22, admitted May 4th, having received a flesh wound of middle third left arm, during the battle of Spottsylvania Court House, May 12th. The patient stated that the wound had been examined before admission, and the surgeon concluded that the missile had been a spent ball which had probably fallen out from wound of entrance. Patient did well until the 20th inst., when the arm and region of elbow became much swollen, and an imperfect sense of fluctuation was detected at elbow. Incisions were made at this point for the relief of the tension of the skin, but no pus was found. On the 28th inst. he was seized with a severe chill, followed by an erysipelatous flush which extended up the arm to axilla. A violent diarrhœa now set in, which resisted all treatment. From this time he had a chill every day, excepting the 7th inst., until the date of death, June 9th. During the last two days patient was delirious; sweating profuse; skin and conjunctivæ yellow.

Autopsy.—Rigor mortis not marked; emaciation moderate; arm greatly indurated, not much swollen; the elbow-joint was found filled with pus, cartilages partially denuded; axillary vein healthy.

Internal organs not examined.

Humerus when sawn open revealed suppurative medullitis. This was more marked at the head of the bone than elsewhere, but extended along the entire shaft of humerus. It was of an intense chocolate-red colour, interspersed with circumscribed abscesses, containing a yellowish fluid resembling pus. Three isolated abscesses of this kind were found in head of bone, and two large elliptical ones in the canal farther down. None were seen opposite seat of injury.

CASE XXI. *Gunshot wound of the right leg; phagedena; no pyemia. Duration* 53 *days.*—G. H. Potter, drummer-boy, Co. E, 60th Ohio, aged 14, of a nervous temperament, admitted in Fairfax Seminary Hospital, July 24th, 1864, having received a gunshot wound middle third of right leg in battle of Weldon Railroad, July 6th, 1864. A conoidal ball had passed through from before backwards on the outer side of tibia, grazing surface of bone, and emerging posteriorly. Upon entrance the lad was in fine spirits, though somewhat anæmic, wound looking well. On the 5th of August the wound assumed an indolent appearance, and the discharge became greater and more fetid. Bromine was thoroughly applied in the ordinary way, and at first checked the progress of the disease. But the patient appeared to have no recuperative energy; a tendency to subcutaneous sloughing was evinced, which, by the 12th of August, had increased so far as to necessitate the slitting up of the integuments, and a second vigorous application of the bromine. It was observed during the operation that the tibia was exposed, and a superficial area of bone was being thrown off. Patient was excessively irritable; appetite capricious. The wound still presented a glairy, unhealthy appearance, and the tendency to undermining continued in spite of all effort to check it. Patient gradually sank. By Sept. 15th violent and persistent vomiting came on, and from this time until date of his death, Sept. 26th, he was almost entirely sustained by beef-tea enemata.

Had had no chills; no discoloration of skin; mind at all times was clear.

Autopsy.—Rigor mortis none; emaciation extreme. Limb not much swollen; foot somewhat œdematous. The ulcer extended from 4 inches below knee to ankle-joint. Femoral vein healthy.

Internal organs all healthy, except the liver, which was exceedingly fatty.

Upon removing the tibia the outer surface at middle third was dead and much blackened from the action of the vapour of bromine, and the living bone around its borders was covered with several roughened spicules of bone. Upon opening the tibia the upper and lower thirds were quite healthy, but the middle third was the seat of varied diseased action. The walls at this point were partially necrosed, of a grayish-slate colour, roughened, and so thin that at one point they appeared to be nearly destroyed. The medullary substance at this place was shrunken, of a blackish-gray colour, and closely adherent to the posterior and lateral walls of the cavity. No new deposit of bone was seen. The tissues both above and below this point had taken on active efforts of repair. The cavity of the medulla was much contracted by delicate cancelli extending from either side, and the original walls of the cavity, for the extent of a full inch either way, were vascular and thickened. The medulla lying in the diminished calibre of canal was of a lively red colour, filled with blood, and presented all the appearances of a highly nourishing medium. As above observed no inflammation was observed in either extremity of the affected bone. Upon examining the femur an interesting appearance was presented. The walls of the bone were much thickened, dotted with reddish spots; the enlarged nutritious arteries and the periosteum were also thickened, vascular, *and easily detached.* When the bone was opened the upper two-thirds of medulla were found to be acutely inflamed, which, as usual, was more intense toward the neck of bone than elsewhere.

Case XXII. *Gunshot wound of the left thigh; no pyemia; nervous symptoms. Duration* 27 *days.*—Private John H. Herring, Co. I, 6th New York Artillery, aged 21, admitted May 26, 1864, having received a gunshot wound in upper third left thigh, at the battle of Spottsylvania Court House, May 12, 1864. A conoidal ball entered outer part of thigh, passed inwards, and obliquely upwards, and was removed on field, from the buttock one inch to the left of anus. Secondary hemorrhage occurred May 29, from posterior wound, which, after patient had lost about ten ounces of blood, was finally controlled by compression. A second hemorrhage occurred the following day, when about the same quantity of blood was lost. Patient now presented a remarkably anæmic appearance, more than the loss of blood could account for. Pulse rapid, compressible; lips livid; conjunctivæ of pearly whiteness.

June 18, the left leg and foot commenced swelling, and in the course of twenty-four hours became very œdematous. He now complained of pain in his right arm, with loss of motion, the member lying passively by his side. The decrease of animal temperature in the affected arm and leg was very evident. The exact difference, unfortunately, was not noted. He commenced sinking from this time. By the 20th instant he was delirious; and died June 22.

He had had no chill in the entire course of disease; no vomiting or discoloration of skin.

Autopsy.—Rigor mortis, none; emaciation not marked; limb not swollen above the knee; the foot and leg were yet swollen, but to a less extent than observed previous to death. The femoral and external iliac vein was filled with a disintegrating clot. This was more marked in iliac than in femoral; but in both portions of the common vessel, the clot was much broken down, adherent to walls of vein, and bathed in pseudo-pus.

Internal organs all healthy.

The femur, when sawn open, revealed suppurative medullitis at upper third. No abscesses were seen, but the uniform yellowish-gray colour was observed extending throughout the medulla in the affected part, and through the cancellated structure of the head. The rest of the bone was healthy, excepting the outer surface of the upper third, where it had been grazed by a ball. Here the periosteum was of a grayish colour, and the bone itself much roughened.

CASE XXIII. *Gunshot wound of the right thigh; "pyemoid" symptoms; skin not yellowish. Duration* 39 *days.*—Private Chas. C. Mulford, Co. K, 6th New York Artillery, aged 42, was admitted into Fairfax Seminary Hospital, May 25, 1864, having received a gunshot flesh-wound of right thigh, upper third, May 9, the ball lodging. The case was treated as a simple flesh-wound, the patient doing very well. June 14, the ball was found and removed. A severe diarrhœa came on June 19, and continued until the 25th instant, when it was controlled. Had a severe chill on the night of June 30, followed by fever; dry tongue, and collections of sordes upon the teeth. I saw the patient for the first time, July 1, when he was in a dying condition; he was bathed in a copious clammy sweat; complained of no pain; mind quite clear. Died July 2. Had no discoloration of skin.

Autopsy.—Rigor mortis not marked; emaciation extreme; affected thigh very little swollen; the wound was open, and the integument for some distance, both above and below this point, was of a purplish-red colour. The bone was found to have been grazed by the ball.

Femoral vein entirely healthy.

Internal organs healthy.

Upon removing the femur, the walls immediately opposite the tract of the ball were entirely stripped of periosteum, and that covering the bone both above and below this region was thickened, and stained of a grayish hue from contact with a dark-coloured offensive pus, which lay both in the wound and around the bone. At the great trochanter an abscess of about the size of a hen's egg was discovered. This was entirely distinct from the collection above mentioned, being separated from it by a tract of comparatively healthy tissue. The pus therein contained was more laudable than that found elsewhere. When the bone was sawn open, which was accomplished with some difficulty, on account of the increased thickness and density of its walls, its entire interior was found filled with pus. The fluid was of an ochre-yellow, with large oil-globules floating upon the surface. It was not offensive.

No trace of the original structure could anywhere be seen. The spongy tissue at the head of the bone was completely discoloured with a uniform grayish-yellow stain, while that of the condyle was perfectly healthy. The walls of the bone were of great thickness, and the sawn surface presented a white, glistening, eburnated appearance. No vascularity was seen; the haversian canals not enlarged.

Remarks.—In the above four cases, each one being the record of a train of symptoms following the grazing of a bone by a missile, and resulting in death, we are taught that, even in the simplest form of gunshot wound, examination of the track of the ball should be made with great care, and if the bone be found injured, if but in the slightest degree, that our prognosis should be cautiously given. No doubt many cases occur in which bones are grazed by shot, without any apparent evil following the injury. But I do not believe that the above conditions are as rare as is generally supposed. It is exceedingly probable that, in all large hospitals, after a battle, when the necessary attention to the living preclude elaborate examinations of the dead, many deaths are recorded as resulting from "pyemia," "diarrhœa," "exhaustion," &c., which would have proved to be instances of suppurative osteomyelitis and ostitis had careful autopsies been held. This much is certain, that in none of the above cases had any complications of the interior of the bone even been suspected by the attending surgeons.

The appearances here seen in the medulla naturally divide themselves into two groups, the suppurative, either circumscribed (Case XX.) or diffuse (Cases XXII., XXIII.); or the variety, the result of local inflammation opposite seat of injury (Case XXI.) The instances of the latter have been resultant upon slight complications of bone, followed by death of that portion opposite seat of injury, accompanied with a marked attempt at repair and in the entire absence of any inflammatory changes, either in upper or lower end of bone. Yet, with these distinctive features, we find that the medulla of the femur was still actively inflamed, and the periosteum and walls of bone vascular and thickened.

In the specimen from Case XXIII., the bone was remarkably hard and thick. Upon examining a section of it microscopically, it was observed that the haversian canals were not enlarged, nor had any such ravages as are seen in caries been made upon the tissue. The clusters of lamellæ were very closely approximated, however, impinging so closely one upon another that their boundaries appeared to overlap.

It will be observed that the cases presented great variety in the symptoms. In one erysipelas, pyarthrosis, and chills were prominent; in another phagedena, progressive emaciation, and vomiting; in a third œdema of affected limb and paralysis of arm of opposite side; and yet, in the fourth, a seeming absence of any salient symptom. In this, however, they agreed: that no symptom appeared in any of the cases which pointed toward the inflamed condition of the medulla.

The question naturally suggests itself, In case the suppuration be recognized during life, would trephining of the bone be a measure worthy of commendation? Mr. Parker (*American Journal of Medical Sciences*, XXV., n. s., 1853, 441) has spoken of such an operation with favour. Even in the absence of being enabled to determine accurately whether or no pus be contained, it should not cast discredit upon this proposed means of relief; for in the event of pus not being evacuated, the patient might experience decided relief from removal of tension over the inflamed tissues.[1]

The exact relation that osteomyelitis bears to pyemia is not yet decided. Most pathologists incline to the opinion that there is a direct ratio between the latter disease and the extent of the inflammation. But while it is true that cases of pyemia from flesh wounds are almost unknown, and the mortality from resections and major amputations by this disease fearful, yet it must also be conceded that it may accrue upon conditions in which no bone has been involved, as, for instance, after chronic diarrhœa—during the after-treatment of lithotomy—and amputation at the shoulder-joint.

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[1] Death is very liable to ensue from glance shots of cranium, unaccompanied with fracture; and the changes which take place in the bone beneath the seat of injury in such cases, are somewhat analogous to those already noticed as occurring in the long bones. The principal changes generally observed are a superficial exfoliation of the external table beneath the part touched by the missile, accompanied with increased vascularity of the surrounding parts—the nutritious arteries frequently becoming sufficiently enlarged to give a pitted appearance to the calvarium. The internal table also shows a marked tendency to exfoliation, and the area, defined by low reddish walls of granulations, is always larger than that on the external table. If the case progresses favourably, the entire thickness of the skull, for an extent corresponding to the line of exfoliation, is liable to come away *en masse*. But quite frequently the outer table shelves off in small scales, leaving an irregular opening in the diploe, which is filled with pouting granulations; and subsequently fatal inflammation of the meninges, and probably cerebral abscess ensue. But death may also take place before any such changes in the skull have had time to supervene. Ethen A. Crane, musician, Co. K, 44th New York, was admitted into Carver Hospital for a gunshot glance wound over right side of os frontis, having been wounded at the battle of Cold Harbor, June 3d. It appeared to be a flesh wound; the bone was barely bruised. He did very well until June 20th, when, to the surprise of his medical attendant, severe cephalic symptoms came on. He became comatose within eight hours, and died on the second day after the appearance of the first untoward symptom. The autopsy revealed a large abscess in the anterior lobe of the right side of the cerebrum, with meningitis. When the calvarium was examined, the external table was found to be perfectly healthy, while the internal presented a very faint attempt at the formation of a circumscribed area. The thickness of the skull was not impaired. When the affected spot was sawn through from above downwards, the diploe was found to be of a dark yellowish-gray colour, having precisely the same appearances which are seen under somewhat similar circumstances at the heads of long bones. It may be said that this discoloration was due to local death, since it was found only at the spot where necrosis would in all probability have been discovered. But necrosis could scarcely have shown itself in so short a time, the patient dying on the nineteenth day after the reception of the injury, and from the condition of the diploe it had evidently been discoloured for some days.

On the other hand, as we have already seen, the bone may be seriously involved, yet no symptoms of purulent infection follow. In reply to this it may be said that many of the instances asserted not to have been pyemia, were in reality cases of that disease. The correctness of the diagnosis I attempted to prove or disprove at the dissecting table, by presence or absence of the metastatic deposit. I thus found that from the preceding cases—twenty-three in number—but seven died of pyemia. I may, however, have been in error by my method, and therefore mistaken in my conclusion. But so long as the etiology of this disease remains obscure, the exact boundary between it and its assimilative conditions must necessarily be unsettled.

I am encouraged by my own observations to believe that we shall be able to make a more accurate discrimination between these two classes of cases, viz: the true pyemic and the pyemoid, at no far distant day. And by availing ourselves of the great opportunities which are presented in our general hospitals after every battle, much could be accomplished by careful study at the bedside and faithful observation at the dissecting table to decide this question.

Art. III.—*Excision of the Knee and Hip-Joints.* By Irving W. Lyon, M. D., of Hartford, Conn., late House Surgeon to Bellevue Hospital, New York.

The literature of these operations, embracing the history of their origin, progress, and results, has been cultivated with a degree of patience and assiduity fully equal to the importance of the subject. Tables embodying all such published cases as had arrived at a definite result, have been carefully compiled and analyzed, in order to furnish legitimate data upon which to base a judgment respecting the comparative merits of excision and amputation which it is designed to supersede. It is proposed in the present paper to give a brief abstract of the early history and progress of these operations, to recapitulate the facts and conclusions deduced from an analysis of the most recent and extended tables, and finally to tabulate and analyze, all such authentic cases, with which we are acquainted, as have attained a determinate result, and which have not yet been used for statistical purposes.

I. *Excision of the Knee-Joint.*—The priority of this operation is now universally conceded to Mr. Filkin, of Northwich, England, who successfully excised the knee-joint of an adult male on the 23d of August, 1762, for disease which had persisted "many years, and to which every topical application was used without effect." But this circumstance nowise derogates from the merit of Mr. Henry Park, of Liverpool, who, early in the year 1781, and without any knowledge of Mr. Filkin's excision, began to elaborate upon the cadaver an operation, the principles and adaptability of which had long been apparent to his mind. An opportunity for testing its practical utility soon after presented in the person of a sailor aged thirty-three, whose knee-joint Mr. Park excised on the second of July of the same year. This man commenced walking in about one year, and subsequently "made several voyages to sea, in which he was able to go aloft with considerable agility, and to perform all the duties of a seaman; he was twice shipwrecked, and suffered great hardship, without feeling any further complaint in that limb, but was at last unfortunately drowned by the oversetting of a flat in the river Mersey."

The history of this case was communicated to Percival Pott by Mr. Park, in his celebrated letter bearing date, Sept. 18th, 1782, and constituted the first record made of the operation. In this communication, which was published in 1783, Mr. Park advocated the propriety, in certain cases, of excision, or "total extirpation of the articulation," instead of amputating the limb above the diseased joint. Not until after this case and the accompanying views of Mr. Park upon the subject of excision had obtained publicity, did Mr. Filkin advance his claims of precedence. Thus it will be seen, that, in the language of Mr. Butcher, "the honor of originating the operation, as it is now performed, of basing it on sound surgical principles, and of showing its applicability to several of the large articulations, is unquestionably due to Mr. Henry Park." Mr. Park's pamphlet was next translated into the French, by Professor Lassus, in the year 1784; but here, as in the United Kingdom, the operation was generally regarded as an unwarrantable innovation, or surgical heresy, unworthy either of its author or of imitation; nor was the unsuccessful issue of Mr. Park's second case, in 1789, at all calculated to propitiate this prejudice.

A period of thirty-four years now elapsed before the operation was again done in the British Isles, by Mr. Philip Crampton, of Dublin, who operated twice in the year 1823. It had, however, in the meantime been performed in France by the two Moreaus, and Roux, and by Mulder in Holland. Of these six cases, two recovered, and four died. In 1829, Mr. James Syme, of Edinburgh, at that time the leader and exponent of British surgery, encouraged by his recent success upon the elbow, excised the knee-joint of a lad aged eight years, with success; he repeated the operation the next year upon a girl aged seven, but this patient being a very unpromising subject, died in eleven days after. Although in 1831, soon after the fatal termination of his second case, Mr. Syme expressed himself favourable to the excision of this joint, yet the progress and ultimate results in the first case seem to have so far influenced his mind as to induce a discontinuance of the operation, for in 1848 he says :—

> "The knee-joint may be excised, but not with the effect of preserving a limb so useful as an artificial substitute after amputation of the thigh. I tried the operation, nearly twenty years ago, on a boy who recovered perfectly from it, and seemed at first to possess a limb little inferior to its fellow; but in the course of time it was found that the growth of the two limbs was not equal, and that the one which had been the subject of operation gradually diminished in respective length, until it wanted several inches of reaching the ground when the patient stood erect."

Whether influenced by the example of Mr. Syme, or not, it is certain that excision of the knee-joint was not again performed in the United Kingdom until Mr. Fergusson became its advocate in 1850. But during these twenty years the operation was by no means neglected, having been performed nineteen times, in all, by Jaeger, Textor, Fricke, Demme, Lang, Heusners, and Heyfelder, with eleven deaths, seven recoveries, and one amputation.

This comprises what is usually termed the first epoch of this operation, and embraces a period of eighty-eight years, extending from the date of Mr. Filkin's case in 1762 to its introduction into London by Mr. Fergusson in 1850. During this time the knee-joint was excised thirty times, resulting in seventeen deaths, twelve recoveries, and one amputation, from which the patient recovered.

Since 1850 excision of the knee-joint has become an operation of very frequent occurrence, particularly in England, where the weight of Mr. Fergusson's authority is naturally the most felt. But in Europe, as in America, the profession at large hesitate to accord to this operation the superior advantages claimed by its partisans; it is indeed far from having attained the dignity of a recognized surgical resource; in short, the question of its expediency is emphatically sub-judice, and all unbiassed surgeons are looking with interest upon anything which tends to elucidate the subject, and establish the real merits of the operation. Mr. Fergusson, in a letter to Mr. Butcher, in 1856, distinctly declares, as his motive for reviving this operation in 1850, "that it had not been sufficiently tried to afford us the data on which to found an accurate decision as to its advantages or otherwise, in comparison with the mutilation of amputation in the thigh." He iterates the same sentiment in his lecture delivered at the Royal College of Surgeons in June, 1864. The design of this paper is to assist in the accumulation of these data, so indispensable to an accurate decision, and for this purpose we appeal to the record and study of individual cases, believing this to constitute the most correct and philosophical method of inquiry, and, accordingly, productive of the most trustworthy results. The most recent, and by far the most comprehensive statistics of this operation, are those furnished by R. M. Hodges, M. D., of Boston, in his very able monograph on "Excision of Joints," published as the Boylston prize essay in 1861. Dr.

Hodges has collected and analyzed 208 cases performed during the period of eleven years, extending from Mr. Fergusson's operation in 1850 to Sept. 1861. He says:—

> "Of the 208 cases of which the table is made up, 129 were males, and 69 females; in 10 the sex is not stated. Of 75 excisions, in which the fact is noted, 29 were of the right, and 46 of the left knee. Of the whole number, 106 recovered, and 60 were fatal. In 42 cases the patients underwent subsequent amputation, from which 26 recovered and 9 died, while in 7 the result is not given. The youngest subject in the present table was 3 years of age, and the oldest 68; the former recovered, the latter died. The average age of the patients in whom the operation failed, *i. e.*, who died or underwent amputation, was $25\frac{2}{23}$ years. Of 85 who recovered, the average age was $19\frac{29}{32}$ years. Of the patients recovering, 65 obtained a useful limb; in 14 the result can be considered only partially successful, the limb being more or less useless; in 27 the simple statement of 'recovery' is all which is given. * * * There are, then, according to the preceding table, 60 deaths in 208 excisions, or one in every $3\frac{7}{15}$ cases. Counting the deaths, amputations, and those cases terminating in a useless limb, 105, or about one-half, are failures of the original operation. Of these failures, 12 were of the right knee, and 21 of the left. In 72 cases the side is not mentioned. This result corresponds in a very striking manner with that derived from Dr. Heyfelder's table, which exhibits a mortality of one in $3\frac{17}{54}$ cases, and also with the summary given by Dr. Krackowizer, of New York, viz., 233 excisions with 63 deaths, and 21 subsequent amputations, or a mortality of one in $3\frac{44}{63}$ cases.
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> "It has been already stated, that, according to Mr. Bryant,[1] one amputation in seven for chronic disease of the knee-joint, proves fatal; and this result is confirmed by the statistics of St. George's Hospital,[2] which gives precisely the same mortality, and, so far as they go, by those of the Massachusetts General Hospital,[3] where, according to Dr. George Hayward, of 30 amputations of the thigh for white swelling, 4 were fatal. Whether, therefore, we take these figures, or those of Mr. Teale, already cited (that amputations of the thigh for disease in the London hospitals gave a mortality of one in $4\frac{1}{2}$, while in the Provincial hospitals the mortality was but one in every 4 cases), it will be seen that favourable conclusions, with regard to this excision, are not sustained by the analysis of cases which has just been given, but that the preponderance on the side of safety is nearly two to one in favour of amputations."

Having now given the most recent returns of this operation which are published, we will next proceed to tabulate and analyze such cases of chronic disease, as have not yet been used for this purpose. And we desire to state that, in the compilation of the following table, especial care has been taken to exclude all such cases as were in any way doubtful as to their final issue; in pursuance of this plan, no case has been taken in which there remained any sinuses, pain, or swelling, however well the case may have promised in every other respect.

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[1] Med.-Chir. Trans., vol. xlii. p. 71.

[2] Med. Times and Gazette, April 6, 1861.

[3] Surgical Reports and Miscellaneous Papers (Boston, 1855), p. 142.

Table of 56 Cases of Excision of Knee-Joint.

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
1	F.	13	R.	Fall 2½ years previous.	Sinuses leading to the much swollen joint; emaciation; hectic; nocturnal startings.	Removal of 2 inches of the articular surfaces and patella; condyles of the femur nearly destroyed.	June, 1853.	In 9 weeks child out of bed. 10 months after operation bony anchylosis, wound entirely closed, and the girl ran rapidly in driving a hoop. One inch shortening.	Quackenboss.	Operator.
2	F.	34	..	3 years' standing.	Joint swollen, with sinuses discharging unhealthy pus; abscesses in the calf.	Excision of the joint; nothing said of the patella.	Nov. 30, 1855.	Death six weeks after operation, from bedsores, diarrhœa, and profuse suppuration.	Baum.	Mittheilungen aus der chirurgischen Universitäts-Klinik zu Göttingen, 1861.
3	M.	32	..	16 months' standing.	Suppuration in the joint, fistulous openings, and hectic.	Excision of the joint; copious hemorrhage from the capsule, which made the patient very weak.	March 5, 1856.	Amputation 8 months after, for non-union and profuse suppuration. Recovery.	Baum.	Idem.
4	F.	10	L	Injury 5 y's before, from falling down stairs	Fistulous openings leading to the disorganized joint; general condition very good.	Removal of patella, ¼ inch of the tibia, and ¾ inch of femur; bones wired together.	Jan. 13, 1857.	Amputation on the 45th day, for caries of the exsected bones; femoral vein firmly plugged. Death from exhaustion on the 14th day after the amputation.	Parker.	Records of N. Y. Hospital.
5	F.	28	L.	8 years' standing, from a fall.	....	Joint excised; patella not removed.	May 27, 1857.	In one year bony consolidation and ability to walk without support; sinuses still remaining; 4 years after 4 sinuses were discharging; knee swollen and very painful; hectic and emaciation. At her request the limb was amputated. The exsected bones were perfectly healthy and very firmly united, but the under surface of the patella was carious. Recovery.	Van Buren.	Van Buren and Finnell.
6	F.	17	..	1 year's standing.	Emaciation, pain, swelling, fistulæ, and subluxation of the tibia.	Joint excised.	July 7, 1857.	Death on the 10th day, from pyæmia.	Baum.	Mittheilungen aus der chirurgischen Universitäts-Klinik zu Göttingen, 1861.
7	M.	24	..	Gunshot wound of lower end of femur and upper end of tibia, of 4 months' standing.	Bones carious, with sinuses discharging.	Removal of the patella and 3 inches of the articular surfaces.	1857.	In 3 weeks the patient was able to leave his bed, on crutches. 10 weeks after the operation he was engaged in business, with bony union, and quite well.	E. S. Cooper.	Cincin'ti Lancet and Observer, Oct. 1861.
8	F.	17	L.	6 years.	Joint discharging pus; general health fair.	Removal of the articular surface of femur; tibia not touched; a slice removed from the under surface of the patella.	April 29, 1858.	In 3 months could bear her weight upon the limb; shortened 1½ inch. 3 years after walked about the house without a stick, but used one out of doors; bony union; patella slightly movable.	T. Sympson.	British Medical Journal, Aug. 17, 1861.

Table of 56 Cases of Excision of Knee-Joint.

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
9	M.	28	..	..	....	Excision of joint.	Nov. 9, 1858.	4 years after he was in full work as a farm laborer.	Prichard.	British Medical Journal, Sept. 26, 1863.
10	M.	10	..	18months' standing.	Sinuses; copious discharges; much emaciation; hectic.	Removal of 2½ inches of femur, and articular surface of tibia cut away with forceps.	1858.	In 4 months boy walked upon crutches, with sinuses remaining. 16 months after, sinuses all healed, bony union, 2½ inches shortening, and the boy walks without pain or difficulty.	Brainard.	Chicago Medical Journal, July, 1858, and June, 1859.
11	M.	23	..	Several years' standing.	Much swelling and pain.	Removal of patella, 1 inch of femur, and ½ inch of tibia; bones wired together.	1858.	Died at the end of 6 weeks, of tubercular meningitis.	Sayre.	Operator.
12	F.	2	L.	..	....	Removal of patella, ½ inch of femur, and ¼ inch of tibia, and a loose sequestrum extending into the medullary cavity of the diaphysis.	Jan 25, 1859.	Died on the 8th day, from exhaustion of suppuration and dysentery.	Krackowizer.	Operator.
13	M.	37	..	..	....	Knee excised.	May 10, 1859.	Knee became quite sound in 10 weeks.	Prichard	British Medical Journal, Sept. 26, 1863.
14	M.	34	..	3 years' standing.	Joint flexed, painful, and fluctuating; hectic and diarrhœa.	Knee excised.	May 14, 1859.	Death on the 7th day, attributed to the shock of the operation.	Baum.	Mittheilungen aus der chirurgischen Universitäts-Klinik zu Göttingen, 1861.
15	M.	21	..	..	....	Knee excised.	May 26, 1859.	4 years after was walking well; knee stiff and very straight.	Prichard.	British Medical Journal, Sept. 26, 1863.
16	M.	9	L.	Blow 3 years before.	Flexed at right angles; knee swollen to twice its natural size, and very painful; debility and emaciation increasing.	Excision of 1 inch of the joint, including the patella.	Aug. 24, 1859.	Could walk in 3 months; in 5 months could run and do anything, with 2 inches shortening. 4 years after the operation he walks and runs as well as other boys, with 2½ inches shortening, due in part to excision, and in part to slight flexion of the leg.	T. Smith.	Med. Times and Gazette, Feb. 7, 1863.
17	F.	29	L.	Injury 2 years before, by striking the knee against an iron bar.	Leg flexed 45°; knee swollen and intensely painful; luxation of tibia.	Excision of 1⅞ inch of the articulation.	Sept. 22, 1859.	Discharged in 5 months, with less than 1¾ inch shortening. 16 months after the operation, walks comfortably, with a slight hinge movement at the joint, for which a light leather splint is worn.	Hulke.	Ibid., Jan. 18, 1862.
18	M.	26	R.	9 years' standing.	Joint much swollen and diseased, discharging large quantities of pus; much constitutional irritation.	Removal of ¾ inch from femur, and ½ inch from tibia; carious excavations gouged out; patella not removed; bones wired together.	Oct. 7, 1859.	Amputation. Death from exhaustion.	J. M. Minor.	Operator.

Table of 56 Cases of Excision of Knee-Joint.

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
19	F.	40	L.	2 years' standing.	....	Excision of the joint.	Nov. 30, 1859.	Death from bedsores and prostration, 6 weeks after the operation.	Baum.	Mittheilungen aus der chirurgischen Universitäts-Klinik zu Göttingen, 1861.
20	F.	30	R.	2 years' standing.	Joint enormously swollen; severe pain; luxation of the tibia; general health good.	Removal of the patella, 2½ inches of the femur, and ⅛ inch of the tibia.	1859.	In 4 months, union, with considerable firmness. 2 years after the operation, walks easily without support, with 2¼ inches shortening.	Freer.	Chicago Medical Journal, July, 1859, and Jan. 1861.
21	M.	15	..	..	Several sinuses discharging from the joint; much emaciation and hectic.	Removal of the patella, and ¼ inch of femur and tibia each.	1859.	Died of pyæmia at the end of 6 weeks.	Carnochan.	Operator.
22	M.	22	L.	Several years' standing, from an injury.	Knee much swollen, painful, with sinuses; general health fair.	Removal of patella and 1 inch of the articular surfaces.	1859.	Amputation in 5 weeks, for return of disease. Recovery.	A. B. Mott.	Operator.
23	F.	30	L.	Injury from a fall 5½ months previous.	Joint much disorganized, swollen, and painful.	Removal of patella, 1½ inch of femur, and ⅓ of tibia; bones wired together.	Feb. 4, 1860.	Union for the most part by first intention. In 2 months walked about the ward on crutches, with a small sinus not closed. 3 months after operation, sinus closed, and patient walked without any support, with 2 inches shortening. May, 1864, knee perfectly sound, and health excellent	J. R. Wood	Amer. Medical Times, Sept. 22, 1860, and operator.
24	M.	23	R.	Exposure on a wreck 17 months before.	Knee swollen, with sinuses and pain; general health bad.	Removal of patella, 1½ inch of femur, and 2 lines of the tibia; bones wired together.	March 15, 1860.	Extensive caries, abscesses, diarrhœa, exhaustion, and death 11 months after the operation.	Krackowizer.	Records of the Jews' Hospital, New York, and operator.
25	F.	18	L.	Injury.	Fistulous openings.	Removal of the patella, and 1 inch of the femur and tibia each.	June 2, 1860.	At the end of a year bony anchylosis. Walked without any support, and acted as a nurse in Bellevue Hospital.	Parker.	Operator.
26	M.	20	R.	Injury fr'm a fall.	General condition bad.	Removal of patella and articular surfaces.	1860.	Amputation at the end of 5 months, for a continuance of the disease. Recovery.	A. B. Mott.	Operator.
27	M.	14	R.	8 years' standing	Joint much swollen, with pain and crepitation; great constitutional disturbance.	Excision of the joint and patella.	1860.	Died at the end of 6 weeks, from exhaustion due to continuance of the disease.	A. B. Mott.	Operator.
28	F.	..	L.	Many years' standing.	Knee bent at right angles, swollen, and painful; health delicate.	Joint excised.	Jan. 9, 1861.	Death in 10 days, never rallying from the operation.	Critchett.	Lancet, April 19, 1862.
29	M.	14	L.	3 months' standing.	Pyarthrosis, with the limb much swollen; abscess in the head of tibia.	Joint excised.	Feb. 1, 1861.	In 6 weeks the wound had healed and the bones united firmly, with 2⅛ inches shortening.	Paget.	Lancet, April 12, 1862.
30	..	22	..	..	....	Joint excised.	March 19, 1861.	2 years after the operation the knee sound and the patient able to walk well, with but little shortening.	Prichard	British Medical Journal, Sept. 26, 1863.
31	F.	6	L.	The result of a fall 1 year previous.	Joint completely disorganized; extreme debility and emaciation.	Joint excised.	May 2, 1861.	Was out of bed on the 18th day, and afterwards discharged with a good and useful limb; union fibrous and flexible.	Price.	Lancet, June 15 and Oct. 5, 1861.

Table of 56 Cases of Excision of Knee-Joint.

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
32	F.	14	L.	..	Knee extensively diseased; leg flexed at nearly an acute angle; extreme pain; some disease of the left lung.	Joint excised.	May 23, 1861.	Bony union at the end of 7 weeks; discharged with a good and serviceable limb.	Price.	Lancet, June 15, and Oct. 5, 1861
33	F.	6	L.	Joint torn open 2 months before by a cart wheel	Joint extensively destroyed by abscesses, suppuration, etc.	Joint excised.	May 23, 1861.	Discharged with a good and useful limb; union fibrous and flexible.	Price.	Ibid.
34	M.	13	..	..	Luxation of the tibia; flexion of the leg at an acute angle; boy in a healthy condition.	Patella and nearly 2 inches of the joint removed, including the epiphysis of the femur.	Aug. 9, 1861.	In 3 months could stand upon the leg, and it was not painful; shortening 2 inches. 15 months after the operation, walked actively with a high heel, without a stick, but generally used one; shortening 3 inches.	Holmes.	Med. Times and Gazette, Feb. 7, 1863, and Lancet, April 19, 1862.
35	M.	9	..	Kick received 2 years before.	Tibia luxated; much effusion in the joint; emaciation and nocturnal startings, preventing sleep.	Patella and joint excised.	Aug. 23. 1861.	Discharged in 3 months. After 18 months walked several miles daily to school; slight motion at the joint.	Terry.	Med. Times and Gazette, May 2, 1863.
36	F.	16	R.	9 years' standing.	Joint swollen, and flexed at right angles.	Excision of $1\frac{1}{2}$ inch of the joint, including the patella, the hamstrings having been previously divided.	Oct. 25, 1861.	Recovered and left the hospital in 10 weeks. 2 years after the operation, bones perfectly united, with but $\frac{3}{4}$ inch shortening; limb well nourished and useful; constitution robust.	Bauer.	Med. and Surg. Reporter, Oct. 17, 1863.
37	M.	$3\frac{1}{2}$	L.	Fall some months before.	Knee flexed and swollen.	Excision of $1\frac{1}{4}$ inch of the articulation; patella removed.	Dec. 17, 1861.	In 10 weeks walked about with great ease and freedom; firm union, and not much shortening.	Skey.	Lancet, April 12, 1862.
38	F.	14	..	Long standing.	....	Joint excised; patella not removed.	1861.	Amputation at the end of 9 months, for caries of the exsected bones. Recovery.	Lawson.	Med. Times and Gazette, May 31, 1862.
39	M.	62	..	..	....	Joint excised.	Jan. 2, 1862	18 months after, could walk 10 miles with considerable ease.	Clarke.	British Medical Journal, Sept. 26, 1863.
40	M.	20	L.	A wearying walk 18 months before.	Knee flexed and very painful; nocturnal exacerbations; health much impaired.	2 inches of the articulation and patella excised.	Feb. 19, 1862.	Recovered with an excellent limb, and walked about without any support; union bony; health vigorous.	Butcher.	Dublin Medical Journal, Feb. 1863.
41	M.	8	..	..	....	Knee excised.	Feb. 21, 1862.	16 months after, could walk without a stick, but generally used one.	Hore.	British Medical Journal, Sept. 26, 1863.
42	M.	6	L.	..	Suppuration and destruction of the joint.	Removal of the patella, $\frac{1}{2}$ inch of tibia, and 2 inches of the femur by thin slices till healthy bone was reached, which necessitated the removal of epiphysis; bones wired together.	May, 1862.	18 months after, walked very well, with the knee moderately flexed, which resulted from walking too soon without support to the knee.	Enos.	Private letter.
43	F.	$1\frac{3}{4}$	R.	3 months' standing.	Joint opened by a deep-seated abscess.	Removal of patella, $\frac{1}{3}$ inch of femur, and $\frac{1}{4}$ inch of tibia.	June, 1862.	Death within a week, from diarrhœa and convulsions.	Krackowizer.	Operator.

Table of 56 Cases of Excision of Knee-Joint.

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
44	M.	11	R.	6 years' standing.	Joint discharging freely from numerous fistulous openings; general condition bad; much emaciation and hectic.	Removal of patella, 1¼ inch of femur, and ½ inch of tibia; bones wired together.	Oct. 14, 1862.	Was able to walk with a cane in 3 months. 22 months after the operation, in good health, requiring no other support than a sole 3 inches high for the affected side.	C. Olcott.	Private letter
45	M.	21	..	..	....	Joint excised.	1862.	Died on the 3d day, from the shock of the operation.	Mr. Spencer.	Edinburgh Med Journal, May, 1863.
46	F.	13	..	3 years' standing.	....	Joint and patella excised.	1862.	8 weeks after the operation the wound was healed and the patient could walk about the room.	Edwards.	Ibid., June, 1862.
47	M.	7	L.	..	Leg flexed upon the thigh, and partially anchylosed; abscesses leading to diseased bone.	Joint and patella excised.	Jan. 30, 1863.	In 3 months, union of flap and bones. July, 1861, the boy runs all about the street, without any support; bony anchylosis; ¾ of an inch shortening; no disease nor tenderness about the joint; health excellent.	Hutchison.	Brooklyn City Hosp'l Records, and author.
48	F.	5	L.	2 years' standing.	Knee swollen and painful; sinuses; emaciation.	Removal of patella, ¾ inch of femur, and ¼ inch of tibia; bones not wired.	March 27, 1863.	Amputation 12 days after, for necrosis of the exsected bones and symptoms of exhaustion. Recovery. This patient was unruly, and kept up a constant motion between the exsected bones.	Voss.	Records of Jews' Hospital, and operator.
49	M.	28	..	..	Destructive inflammation of the joint, with sinuses and pain.	Joint excised.	May 9, 1863.	Amputation at the end of 9 months, for a continuance of the disease. Recovery.	Mr. Wood.	Med. Times and Gazette, April 30, 1864.
50	F.	10	R.	5 years' standing, from a fall from the bed.	Joint much swollen and painful; luxation of tibia; emaciation extreme.	Joint excised, and a large portion of the tibia removed.	June 20, 1863.	Recovery, with firm bony union; goes about on crutches, with prospect of a good and useful limb.	Hancock.	Lancet, Oct. 10, 1863.
51	M	25	..	Disease from childhood.	Pyarthrosis, luxation of tibia, and nocturnal exacerbations of pain.	Joint excised; a considerable portion of tibia and fibula removed with the patella.	Oct. 30, 1863.	Left the hospital in 10 weeks, with the aid of crutches. 3 months after, able to walk several miles daily, with 1¼ inch shortening.	Terry.	Med. Times and Gazette, July 30, 1864.
52	M.	..	..	..	....	Joint excised.	..	When last seen, he was walking (as he said) 20 miles per day.	Harrison.	British Medical Journal, Sept. 26, 1863.
53	..	15	..	..	....	Joint excised.	..	Amputation on account of a painful and œdematous state of the integuments of the foot; the knee was admirably restored.	Coe.	Ibid.
54	M.	40	..	..	....	Joint excised.	..	Died from exhaustion, a week or 10 days after the operation.	Coe.	Ibid.
55	M.	38	R.	8 years' standing.	Joint swollen and very painful; partially flexed and anchylosed; nocturnal startings.	Removal of patella, 1½ inch of femur, and ½ inch of tibia, and all remaining articular cartilage.	Feb. 6, 1864.	Died in 23 days, of pyæmia; tubercles in the lungs and liver cirrhotic.	J.R. Wood	Bellevue Hospital Records, and operator
56	M.	9	L.	Long standing.	Sinuses; hectic.	Removal of patella, 1 inch of femur, and ¼ inch of tibia.	Feb. 12, 1864.	Amputation 25 days after, for extensive necrosis of the exsected bones. Recovery.	Krackowizer.	Records of Jews' Hospital, N. Y., and operator.

Of these 56 cases, 31 recovered, 14 died, and 11 suffered amputation; making 55.35 per cent. of recoveries, and 44.64 per cent. of failures. Of the 31 recoveries, 29 had serviceable limbs and walked with more or less comfort and security; in the 2 remaining the bones had firmly united, and both gave every promise of future usefulness. Of the 11 amputations, there were 8 recoveries, 2 deaths, and in one the result is not stated. Excluding the doubtful case, we have 80 per cent. of recoveries, and 20 per cent. of deaths after these secondary amputations. Of the whole number 32 were males, 22 females, and in 2 the sex is not stated. Of the 32 males, 18 recovered, 8 died, and 6 underwent amputation, from which 5 recovered and one died. Of the 22 females, 12 recovered, 6 died, and 4 suffered amputation, from which 3 recovered and 1 died. There are then, for the males, 56.25 per cent. of recoveries, and 43.75 per cent. of failures; and for the females, 54 54 per cent. of recoveries, and 45.45 per cent. of failures, making for the females, 1.71 per cent. less of successful cases than for the males. The average age of the 31 cases which recovered, was 17 $\frac{15}{62}$ years; while the average age of the 25 failures was 20 $\frac{59}{100}$ years.

The oldest subject was 62 years of age, and recovered, the youngest was but 21 months old, and died. Of the whole 56, 11 were upon the right and 21 upon the left side of the body, while in 24 this point is not stated. Of those upon the right side, 5 recovered, 4 died, and 2 suffered amputation; making 45.45 per cent. of recoveries, and 54.54 per cent. of failures. On the left side there were 13 recoveries, 3 deaths, and 5 amputations, making 61.90 per cent. of successful, and 38.09 per cent. of unsuccessful cases, which leaves a balance of 16.45 per cent. of recoveries in favour of the left side.

The supposed cause of the disease is stated in 17 cases; in 13 of these it is ascribed to injuries of various kinds, such as falls, slight blows, kicks, etc. In one the joint had been torn open by a cart wheel two months previous, in another the patient had sustained a gunshot injury of the joint four months before, while in two the disease was referred, respectively, to a wearying walk, and exposure on a wreck.

It has become an almost invariable practice to remove the patella in this operation, hence but a limited opportunity is afforded for studying the result of its non-removal. In the preceding table the patella was wholly removed in 28 cases, partially in one, and left entire in 3; in 24 cases there is no information on this point. Of the 28 cases of removal, 16 recovered, 7 died, and 5 underwent amputation; resulting successfully in 57.14 per cent. of the cases, and unsuccessfully in 42.85 per cent. Now by classing the case of partial excision with those in which the patella was not removed, where it properly belongs, we have 4 cases of non-removal, with 3 subsequent amputations and one perfect recovery, and this the case of partial excision. The result is, then, 75 per cent. of failures and 25 per cent. of recoveries; the failures are therefore 32.15 per cent. greater than in the cases of total excision. But nothing can more aptly illustrate the unhappy results of leaving the patella, than Case 5; by a reference to which, it will be seen that the articular surfaces alone were removed. The case, at first, progressed most satisfactorily, so that in a year after the operation, the bones were firmly united, and the patient walked without support; but sinuses remained, and the joint became subject to attacks of painful inflammation and abscesses. At the end of 4 years, the knee was swollen and very painful, with fistulous openings, and the patient was haggard and emaciated from pain and sleeplessness. In this condition she begged to have the limb amputated. After its removal, the bones were carefully examined; no trace of disease could be discovered about the femur or tibia, which were so firmly consolidated, that had force been applied, they must have broken at some point other than through the callus. But not so with the patella; its under surface was carious, and fully explained the origin of the abscesses and sinuses which lead to it. It is just to suppose that if the patella had been primarily removed in this instance, the subsequent sacrifice of the leg would have been prevented.

The causes of death after the operation in the 14 cases, were as follows: Exhaustion, 6; shock, 3; pyæmia, 3; tubercular meningitis, 1; diarrhœa and convulsions, 1.

The causes of subsequent amputation were, continuance of the disease, 6; acute necrosis of the bones, 2; painful and œdematous state of the integuments of the foot, 1; disease of the patella, 1; non-union and profuse suppuration, 1.

The cause of death after these secondary amputations was, in both cases, exhaustion.

It is now quite satisfactorily ascertained that the subsequent growth of the limb will be impaired by the removal of the epiphyseal lines of either the femur or tibia; this result had been anticipated upon physiological grounds, but the gradual accumulation of more demonstrative evidence has at length superseded theory, and established the truth in the matter.

The latest and best authority upon this subject, of which we are cognizant, is a paper by Mr. Humphry, published in the *Medico-Chirurgical Transactions*, vol. xiv. page 301. In this paper Mr. Humphry has collected for comparison, 18 cases of excision of the knee-joint in children. Of this number, 8 had a small and 10 a large portion of the bones removed. We will let Mr. Humphry state the results:—

"In the first eight on the list, the growth of the limb operated on has maintained its proper rate, as compared with that of the other limb. It will be observed, however, that the operation was, in two of these, performed at the age of seventeen, and at this period the growth of the body may have been nearly completed. In all these eight cases, a small amount only of the bones was sawn away, probably in none of them was either of the epiphyseal lines interfered with, except in No. 8. In that instance it is stated that two inches and a half were removed from both the bones. The patient, however, was seventeen years old at the time of the operation; and we must not draw much inference from the report of the limb keeping pace with its fellow, after that age.

"In the remaining ten cases, the growth of the limb was more or less arrested. In six of these (9 to 14 inclusive), considerable quantities of the bones were removed. The epiphyseal lines were probably interfered with, or cut away in all." * * *

"It should be observed that in nearly all the cases in which the growth has been impaired, even in those in which it has been so to the greatest extent, the reports state that the limbs are exceedingly useful. Indeed, it would seem that the efficiency of the limb in each case is not materially lessened by its shortness.

"I think that we are justified in concluding—*first*, that if the epiphyseal lines are sawn away in the operation of excision of the knee, the subsequent growth of the limb will be impaired; *secondly*, that if the epiphyseal lines be left intact, there is much probability that the growth of the limb will fully or nearly equal that of the other limb; *thirdly*, that the probability, or even certainty, of a failure of growth in the limb, is not to be regarded as a fatal objection to the operation, and scarcely constitutes an objection at all, after the age of fourteen or fifteen."

In our table of 56 cases, but two have any special bearing upon this point; the *first*, Case 34, was a boy aged 13, who had nearly 2 inches of the articulation excised, including the epiphysis of the femur. At the end of three months the shortening was two inches, but one year later it had increased to three inches; the *second*, Case 44, was a boy of 14; in this instance, $1\frac{1}{2}$ inch of the femur and $\frac{1}{2}$ inch of the tibia was removed. 22 months after the operation, the boy required, in walking, a sole 3 inches high, for the affected limb.

Of the operation and after-treatment we do not propose to speak, as these are discussed at length in most of our text-books of surgery. The great desideratum to be obtained in the treatment, is the greatest possible degree of immobility between the exsected bones.

We have, then, as the analysis of the 56 preceding cases, 31 successful cases, or 55.35 per cent. of the whole number; 14 deaths, one in every four, or 25 per cent., and 11 amputations, or 19.64 per cent. of the whole number.

The result of Dr. Hodges' 208 cases, already cited, was as follows: 103 successful cases, or 49.51 per cent., 60 deaths, one in every $3\frac{7}{15}$ cases, or 28.84 per cent., and 42 amputations, or 20.19 per cent. We have, therefort, for our table, 5.84 per cent. more of successful cases, 3.84 per cent. less of deaths, and .55 less of amputations than in that given by Dr. Hodges. Now, by taking the whole number of cases in both tables, we have an aggregate of 264 excisions of the knee-joint, resulting in 134 successful cases, 74 deaths, 53 amputations, and 3 useless limbs, making 50.75 per cent. of successful cases, or somewhat over one-half; one death in every $3\frac{21}{37}$ cases, or 28.03 per cent., and 20.07 per cent. of amputations.

But we have already seen from Dr. Hodges, that the mortality after amputation of the thigh for chronic disease of the knee-joint, is one in every seven cases, or 14.28 per cent., and that this result was the same from three separate sources. This, compared with the mortality following the 56 excisions herein tabulated, viz., one in every four, or 25 per cent., leaves a balance of 10.72 per cent. of deaths on the side of excisions, to say nothing of the 19.64 per cent. of secondary amputations necessitated by that operation. The difference in mortality would be 3.03 per cent. greater by adopting as the standard of comparison the percentage of deaths following the aggregate of excisions given above. These returns, although somewhat more favourable than those of Dr. Hodges, are, nevertheless, damaging to the operation—so that, taking the greater risk of life, and the large proportion of subsequent amputations, for excisions on the one hand, and the degree of perfection attained in the construction and application of artificial limbs on the other, it is quite certain that the surgeon would give the patient the *best chance*, in every sense of the term, by amputating above the diseased joint.

a. *Excision of the Knee-Joint for Angular Anchylosis.*—Dr. Hodges, in his paper, already referred to, has collected nineteen cases of excision of the knee-joint for varying degrees of angular anchylosis; of this number 10 recovered, 8 died, and one underwent amputation. We have collected 11 cases, which are here given

Excision of the Knee-Joint for Angular Anchylosis.

No.	Sex.	Age.	Side.	Cause and duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
1	M.	35		Antecedent disease	Bony rectangular anchylosis: no disease about the joint; health good.	Removal of a wedge-shaped piece of bone including the joint (Buck's method of 1844.)	1845.	In 2 months union firm and patient able to walk without support.	Post.	Operator.
2	M	15	L	Wound of the joint.	Rectangular anchylosis.	Buck's of 1844.	Oct. 5, 1848.	Perfect recovery, walked without any support; solid bony union, 1 inch shortening.	Porker.	Operator.
3	M.	2[illegible]	L.	Injury from the bursting of a gun 4 months before.	Leg partially flexed; subluxation and great distortion of the joint; anchylosis fibrous; patella fractured and ununited.	Crucial incision; flaps dissected back: anchylosis broken up by forcible flexion and the knife; and the articular surfaces excised with a portion of the patella; bones wired together.	Aug. 9, 1853.	In 3 months the patient was discharged with bony union, walking without any support, with 1¼ inch shortening.	Buck.	Records of the New York Hospital, 1853, and operator.
4	M.	25	L.	Antecedent disease.	Bony anchylosis at an acute angle; no active disease about the joint; health good.	Buck's of 1844.	Oct., 1858.	Died of tetanus during the 3d week, supposed to have been caused by the excessive tension of the flexor tendons, which should have been divided.	Post.	Operator.
5	M.	18	L.	..	Leg flexed upon the thigh; knee perfectly anchylosed.	Buck's of 1844.	April 1, 1861.	Was kept in the hospital under treatment but 6 weeks, and within a year walked well and firmly upon the leg with 2 inches shortening.	Fergusson.	Medical Times and Gazette, July 12, 1862.
6	M.	19		Punctured wound of the knee 4 years previous.	Anchylosis with the flexor tendons contracted, so that the heel nearly touched the gluteal muscles.	Removal of 1 inch of the femur, ¾ inch of the tibia and patella. All the flexor tendons were divided; bones wired together.	March, 1862.	In 2 months the patient could comfortably walk around the room; 1 year after, with the aid of a cork sole 1½ inch high, he walked without any inconvenience.	Tewksbury.	Records of the Maine Medical Association, 1863; and operator.
7	F.	12	R	Disease which began 6 y'rs before.	Rectangu'ar bony anchylosis; health delicate.	Buck's, 1844. 2½ inches removed.	June 13, 1862.	In 5 months able to walk without support; firm bony union.	Crosse.	British Medical Journal, Aug. 22, 1863.
8	M.	25	L.	Disease during infancy.	Knee partially anchylosed at right angles, and subluxated; no active disease in the joint; man strong, healthy, and muscular.	Buck's of 1844.	June 14, 1862.	Discharged in 2½ months with firm bony union, and able to bear some weight upon the leg.	Fergusson.	Medical Times and Gazette, Sept. 13, 1862
9	M.	29	L.	Gunshot injury.	Bony anchylosis, subluxation, and great deformity; some inflammation of the soft parts; and an abscess near the joint; health fair.	Buck's of 1844.	Sept 6, 1862.	Discharged in 3 months; within a year could walk 3 miles an hour with perfect ease. Knee firm, 1 inch shortening.	H. Smith.	Medical Times and Gazette, Oct. 10, 1863.
10	M.	11	R.	Incised wound from falling on a scythe 9 months before.	Joint firmly anchylosed at right angles, and permanent contraction of the flexor tendons.	Buck's operation of 1853.	Nov. 3, 1863.	Discharged in 4½ months, with two small ulcers unhealed, walking with a cane and ¾ of an inch shortening. 2 months later the ulcers were healed, and the boy walked ½ mile daily to school with the aid of a cane.	Peters.	Records of the New York Hospital and private letter.
11	M.	22	L.	Wound of the joint.	Bony anchylosis.	Knee excised.	..	Recovery.	Beck.	Arch. für Klin. Chir., von Langenbeck, vol. v, page 256.

Of these 11 cases, 10 recovered, and one only died. Of the recoveries, 8 had limbs of great usefulness, one was discharged two and a half months after the operation, beginning to use the limb, with firm bony union, while in one, no information as to the usefulness of the member is given, beyond the simple statement of recovery. These returns are exceedingly flattering, especially when compared with those obtained from the analysis of Dr. Hodges' 19 cases; indeed, it is difficult to account for a discrepancy so remarkable. Our table, though small, is, nevertheless, a respectable protest against the verdict which those 19 cases had clearly indicated, and certainly justifies and encourages the continuance of the operation. The operation which has been the most practised for anchylosis of this joint, is that first performed by Dr. Gordon Buck, of New York, in which a wedge-shaped piece of bone was removed, including the original articulation. This was designed as an improvement upon Dr. Barton's operation, which consisted in a division of the femur just above the condyles, thereby allowing the leg to be brought down, but at the expense of a great deformity, produced by the projection forwards of the enlarged joint.

In the performance of Dr. Buck's operation, no inconsiderable degree of difficulty and annoyance has been encountered in dividing the bones at such an angle as to insure a parallelism between their sawn surfaces after the limb was brought into the straight position. It has often been found necessary to remove thin slices from each surface before the operation could be completed, and a satisfactory apposition obtained. In order to obviate this objection, Dr. Buck, in operating upon his second case, August 9th, 1853, modified the proceeding as follows: After dissecting back the soft parts and exposing the bones, instead of removing the wedge-shaped piece as before, the anchylosis was broken up by forcible flexion and the knife, after which, the ends of the bones were excised, and the operation completed as for chronic disease. As compared with the former, Dr. Buck regards this as by far the more eligible operation, and recommends it accordingly.

b. *Excision of the Knee-Joint for Injury.*—The record of this operation for injuries is exceedingly discouraging. Dr. Hodges has compiled 12 cases in which the knee-joint was either wholly or partially excised for traumatic causes. Of this number, but 3 recovered. Six operations were done for gunshot wounds, with five deaths and one recovery, and this a case in civil life; as the case is one of interest, we will quote it as given by Dr. Hodges.

"A lad, aged nineteen, received a charge of shot in the inner condyle of the left femur, penetrating but not perforating the bone. A slice was excised from each bone, so as to furnish a surface for anchylosis, and then the condyle containing the shot was removed by an oblique cut. The patella was left. At the end of three months, the patient walked easily with the aid of a stick, and the patella remained loose and movable."

We have been able to secure but two additional cases, both for gunshot injuries, one in civil, the other in military practice. The first was done by Verneuil, and is unfortunately robbed of its greatest interest, by a very important omission in the record, viz., as to the time of its performance after the injury. It is as follows: A boy, aged 18, sustained a pistol-shot wound of the knee-joint. The ball passed from above downwards and from without inwards, through the external condyle of the femur, and cavity of the joint, imbedding itself in the head of the tibia. Six centimetres ($2\frac{17}{50}$ inches) of the articulation were excised, patella not mentioned. Nine months after the operator presented the patient to the Surgical Society of Paris, perfectly well.[1]

The second case is one of extraordinary interest, inasmuch as it is undoubtedly the first record of a successful excision of the knee-joint in military surgery. The operation was performed by R. B. Bontecou, M. D., Surgeon U. S. V., formerly of Troy, N. Y. The following abstract was taken from the notes of that gentleman, which were kindly placed at my service:—

A soldier, aged 25, received a gunshot injury of the right knee, on the 22d of October, 1862. The ball passed through a portion of the external condyle, and lodged in the popliteal space. On the 24th the patella and 1½ inch of the condyles of the femur were excised, and the articular surface of the tibia pared with the forceps till the cartilage was removed and bone substance reached. A portion of the wound healed by first intention, all discharges had ceased by the 11th of November, and the patient was discharged December 28, 1862, with the wound entirely closed, and without pain or tenderness about the joint. After his discharge the patient was transferred to a Northern hospital, since which Dr. Bontecou has had no reliable information as to the condition of the limb. This, as the result of quite an extended inquiry, is the only successful excision of the knee-joint which has occurred during the present war, of which we have gained any knowledge. The operation has been done a number of times; but, with the above exception, has terminated unfavourably.

II. *Excision of the Hip-Joint.*—This operation, although originally suggested in 1769, by Mr. Charles White, of Manchester, was first performed by Mr. Anthony White, of Westminster Hospital, London, in the month of April, 1822. His patient, a boy 14 years of age, had injured his left hip by a fall down stairs five years before. During these five years the boy had suffered much from a very severe hip disease. Four inches of the bone, including the head, neck, and both trochanters, were removed. The wound healed quickly, and the health of the patient speedily improved. Within twelve months he enjoyed a most useful compensation for the loss of the original joint, had perfect flexion and extension of the thigh, and every other motion except that of turning the knee outwards.[1] During the next twenty-three years the hip-joint was excised for disease and injury eight times, by Hewson, Oppenheim, Seutin, Textor, and Brodie, resulting in seven deaths and one recovery. By including with these the case of Mr. White we have in all nine operations, of which six were for hip disease, two for gunshot injury, and one for fracture of the neck of the femur, followed by inflammation and abscesses. Of these nine but two recovered, and both were cases of hip disease.

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[1] Société de Chirurgie de Paris, Séance du 10 Juin, 1863.

This was the status of the operation in 1845, when Mr. Fergusson resolved to see how much conservatism inhered in the proceeding, and accordingly operated upon a boy, aged 15. The case resulted in a perfect success, and contributed largely towards establishing the popularity of the undertaking. The interest connected with the subsequent history of this operation obtains chiefly in its results. These have been carefully studied by various writers, among whom Fergusson, Hancock, Smith, Price, Fock, Heyfelder, Sayre, and Hodges are the more prominent. It does not enter into our purpose to examine the conclusions arrived at by each of these authors, inasmuch as we have been ably anticipated in this by the last named gentleman, from whose elaborate essay on excision we have already had occasion to quote so extensively. Dr. Hodges has carefully gone over all the published cases of this operation and selected such as could be used for statistical purposes. His table, therefore, embodies all the available material contained in preceding papers, and by a citation of his analysis we shall be in possession of the most recent information on the subject. By a reference to his table for excision of the hip-joint it will be found to contain 133 cases, 111 of which are completed, while in 22 the patients had not been under observation a sufficient length of time to determine the result. The following remarks are contained in the analysis of these cases by Dr. Hodges:—

> "In the preceding 133 cases, completed and incompleted, 89 patients were males, 38 females, and in 6 the sex is not stated. Of 79 excisions, in which the fact is noted, 36 were of the right hip and 43 of the left. These numbers hardly tend to confirm the observation as to the greater frequency of disease on the left side advanced by Mr. Lonsdale, who says that of 112 deformities of the hip from disease, presented for treatment at the Royal Orthopedic Hospital, London, 65 were of the left hip and 47 of the right. Of the 111 completed cases, 56 resulted in recovery, with more or less useful limbs, and 53 were fatal, at periods after the operation varying from a few hours to eighteen months. One patient, at the end of four months, underwent amputation, from which he recovered; another, after the lapse of three years and a half—the disease having returned at the end of one year—also had his limb amputated, and died two hours after the operation. The rate of mortality, throwing out the case fatal after amputation, appears, therefore, to be 47.74 per cent. * * * Of the patients recovering 26 were able

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[1] Chelius, vol. iii. p. 738.

to walk either with a cane or a high-heeled shoe, and 8 by the aid of crutches or other support for the limb; whilst in 22 the final condition, beyond the mere fact of recovery, is not stated. The disease returned, and a fatal issue resulted in 4 cases at the end of periods varying from one to three years. The oldest patients were two men, aged 54, both of whom died of bed-sores, one in 11 and the other in 53 days. The youngest patient was a boy, 3 years old, who died twelve months after the operation, of 'diphtheritic croup,' the condition of the limb at the time not being reported. The average age of those recovering was $11\frac{19}{53}$ years, and of those not recovering $17\frac{32}{49}$ years."

In the fatal cases the causes of death were as follows: exhaustion, diarrhœa, and suppuration, 17; general disease and phthisis, 8; pyæmia, 4; hemorrhage, 3; from the operation, 2; bed-sores, 2; psoas abscess, 2; erysipelas and phlebitis, 4; cerebral disease, 2; cardiac disease, 1; Bright's disease, 1; "uremic convulsions and exhaustion," 1; "diphtheritic croup," 1; not reported, 5. Of these fatal, and the two unsuccessful operations, 16 were of the right, and 14 of the left hip; in 25 the side is not stated. In 58 cases in which the acetabulum was gouged, cauterized, or scraped, there were 28 recoveries and 30 deaths—one being after a subsequent amputation. This represents a mortality of 51.72 per cent. In 50 cases in which the acetabulum was not gouged, there were 26 recoveries, 23 deaths, and in one the limb was amputated after the excision, and the patient recovered. Here the mortality is 44 per cent., or 7.72 per cent. in favour of non-interference. In 3 cases the acetabulum was diseased, but not gouged; the result was fatal. As in the shoulder, therefore, the balance is in favour of partial excision. In summing up Dr. Hodges makes the following conclusion:—

"That, considering the mortality after the operation, viz., one death in every $2\frac{5}{53}$ cases, and the success which follows less heroic methods of treatment, excision for 'hip disease' does not merit a very favourable verdict."

We next present a table of 41 cases, collected from various sources with the same care and exclusiveness which were exercised in the selection of excisions of the knee-joint.

Table of 41 *Cases of Excision of Hip-Joint.**

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
1	M.	18		3 years' standing.	....	Head, neck, and both trochanters removed.	April 18, 1852.	Wound entirely healed in 20 weeks; 5 years after the operation patient walks 10 to 12 hours daily, with freedom in the motions of the joint.	Heusser.	Deutsche Klinik Beilage, No. 10, 1860.
2	M.	3½	R.	Fall 2 years before.	Joint much swollen, with fistulous openings and much nocturnal pain; loss of appetite; emaciation and hectic.	Head and neck close to trochanter major removed; acetabulum carious and gouged.	Oct., 1853.	Wound nearly closed in 6 months; at the end of a year wound entirely closed, and patient walked upon the limb; 2 years after walked without any support whatever, with 1¼ inch shortening, good motion, and perfect health.	Quackenboss.	Operator.
3	M.	13	L.	Acute synovitis following severe exercise and exposure nearly 3 years before.	Very much emaciated, sleepless nights, no appetite, and tortured with continuous pain; hip and thigh riddled with sinuses; 2 weeks before the operation the carious femur fractured near its middle; limb 2 inches shorter than its fellow.	Removal of the head and the shaft below the point of fracture, making in all from 8½ to 9 inches of bone; periosteum, which was mostly detached from the diseased bone, was carefully preserved; neck entirely disappeared; head lying loose; carious acetabulum gouged.	May 10, 1860.	Dismissed from treatment in 12 weeks with considerable power to move the limb in different directions; 4 years after the operation boy healthy and robust, walks without cane or crutch, can ride horseback, and has all the motions of the hip-joint nearly perfect, and when last seen was mowing away grain in a hay-loft.	H. G. P. Spencer.	Private Letter.
4	M.	4	L.	Fall 2 years before.	Capsule ruptured; extensive femoral abscesses; no external opening.	Removal of the head, and acetabulum gouged.	July 8, 1860.	Wound nearly closed in 6 weeks, with motion and ½ inch shortening; 2 years after hip perfectly sound, walked well with a cane, and 1½ inch shortening.	Sayre.	Trans. of the Amer. Med. Association, 1860, and operator.
5	M.	17		1 year's standing.	....	Removal of the head, neck, trochanters, and 2 inches of the shaft.	Dec. 22, 1860.	Wound nearly healed in 1 month; 3½ years after the operation, the patient acts as a hack-driver, and gets up and down from the box with ease, hip sound, motion very free, and walks without any support.	J. R. Wood.	Amer. Med. Times, Feb. 2, 1861, and operator.
6	F.	12	R.	Fall 4 years before.	Sinuses, emaciation, and hectic.	Removal of the bone above the trochanter minor; acetabulum carious, but not gouged.	1860.	In 6 months wound entirely closed, and the girl walked with the support of a splint, with good motion at the joint, and 2 inches shortening.	A. B. Mott.	Operator.
7	F	20		2½ years' standing; from an injury.	Abscesses about the joint.	Removal of the bone below the trochanter minor and the brim of the acetabulum pared.	January 12, 1861.	Wound never entirely closed, but continued to discharge pus, and from time to time dead bone, till death from exhaustion 2 years and 10 months from the operation.	Buck.	Amer. Med Times, March 23, 1861, and private letter.
8	M.	20	R.	Fall 18 months previous.	Large abscesses communicating with the hip-joint, and discharging copiously, has made him weak and thin.	Femur divided through the middle of the trochanter major; the carious brim of the acetabulum gouged.	April 17, 1861.	Hip continued to discharge, and the patient sank and died of exhaustion 4 months after the operation.	Peters.	Records of St. Luke's Hospital, New York.
9	M.	4	L.	Fall 2 years before.	Much debility, and a large abscess in the region of the hip.	Removal of the head, neck, and a portion of the acetabulum.	April 20, 1861.	3 years after the operation walks and jumps all day without support.	Jacobi.	Amer. Med. Times, July 6, 1861, and operator.

Table of 41 *Cases of Excision of Hip-Joint.*

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
10	F.	10	R.	1¾ year's standing; from a fall on curb-stone.	Sinuses about the joint and great emaciation.	Bone divided just above the trochanter minor; neck absorbed, and head lying loose; acetabulum gouged.	May 8, 1861.	In 6 weeks the wound nearly closed; 18 months after the operation could walk without support, good motion at the joint, and shortening ½ inch.	Sayre.	Operator.
11	M.	5	R.	2 years' standing.	Hip much swollen, with a sinus discharging; health fair.	Removal of the head, neck, and both trochanters.	Aug. 27, 1861.	About on crutches in three months, shortly after began to use the limb, the wounds being all healed.	Bryant.	Lancet, July 12, 1862.
12	M.	8	L.	Fall 2 years previous.	3 sinuses about the joint, great emaciation, and hectic.	Removal of the head of femur, and acetabulum gouged.	Oct. 1, 1861.	Walked out of the hospital in 10 weeks with the wound perfectly healed and 2½ inches shortening.	Holt.	Lancet, May 24, 1862.
13	F.	4	R.	10 months' standing.	Has hip disease on both sides, beginning on left, summer of 1859; on right, spring of 1861.	Head and neck mostly absorbed; the cup-shaped shell of the head anchylosed to the acetabulum; neck divided close to the trochanter major.	Dec. 20, 1861.	Necrotic bone kept the wound open 2 months, when it was attacked with diphtheria, which manifested itself in the throat 4 days after, and in 2 days more caused death from asthenia.	Krackowizer.	Operator.
14	M.	10	L.	Fall from a wagon 6 years before.	Hip riddled with abscesses, great emaciation and hectic; femur anchylosed to ilium, with cloacæ through the new bone.	Bone sawn at the trochanter minor, afterwards the ferrule of new bone inclosing the dead was cut off 2 inches below.	Dec., 1861.	Improved till the 9th day when, from exposure, tetanus supervened and caused his death on the 15th day after the operation.	Sayre.	Operator.
15	F.	10		2 years' standing.	Sinuses discharging profusely; great emaciation and hectic.	Head nearly absorbed; bone divided 1 inch below the trochanter minor; acetabulum perforated and gouged.	Dec., 1861.	2 years after wound perfectly closed, patient quite fleshy; walks without support, but generally uses a cane in the street, and a cork-sole 3 inches high for the shortening.	Sayre.	Operator and patient.
16	M.	24	R.	6 years' standing.	Sinuses discharging copiously; much emaciation and hectic.	Removal of the bone below the trochanter minor; acetabulum not gouged.	1861.	Died at the end of a month of exhaustion.	A. B. Mott	Operator.
17	M.	17		..	Hip riddled with sinuses: much emaciation and prostration; diarrhœa and hectic.	Bone divided between the trochanters; acetabulum carious, gouged, and cauterized with a hot iron.	..	Death on the 7th day; never rallying from the operation.	Dolbeau	Société de Chirurgie de Paris, Séance du 27 Août, 1862.
18	M.	6		Fall 23 months before	Six sinuses discharging profusely; emaciation and hectic.	Bone divided ½ inch below trochanter minor, 3 inches being removed.	March, 1862.	One year after the operation walked without support, and danced, and had all the motions of the natural joint; can flex the thigh so as to touch the knee to the chin, 1¼ inch shortening, boy robust.	Tewksbury.	Records of the Maine Med Asso. June, 1863, and operator.
19	M.	9	L.	Kick from a boy 3 years before.	Copious discharge from several sinuses; emaciation extreme.	Neck entirely absorbed, the remains of the head lying loose in the acetabulum which was gouged; bone divided just above the trochanter minor.	April 10, 1862.	Wound closed in 4 months; 2 years after joint sound, and walked well with a cane, and 1½ inch shortening.	Sayre.	Operator and private letter.

Table of 41 *Cases of Excision of Hip-Joint.*

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
20	F.	4¼	L.	2¼ years' standing.	Health good.	Joint excised and the acetabulum gouged.	June 28, 1862.	In 6 months the parts were soundly healed with 1¼ inch shortening	Holmes.	Med. Times and Gazette, March 14, 1863.
21	F.	13	R.	Fall on the trochanter 2 years before.	Sinuses discharging profusely; emaciation extreme.	Neck absorbed, head nearly absorbed, lying loose in the acetabulum; bone divided between the trochanters; acetabulum perforated, and an abscess between the internal periosteum and bone.	July 3, 1862.	2 years after the operation walks well with a cane, with considerable motion and 2 inches shortening; health perfect.	Sayre.	Operator.
22	F.	3½	R.	1 year's standing.	Prostration from suppuration: habit very cachectic.	Head and most of the neck absorbed; acetabulum carious and gouged, so that the inner periosteum was exposed for a considerable extent; bone divided between the trochanters.	July 7, 1862.	Died of tubercular meningitis 30 days after the operation, the wound doing well.	Krackowizer.	Trans. N. York Pathological Society, and operator.
23	F.	4	L.	Long standing; from a blow.	Emaciated from pain and sleeplessness.	Femur divided below the trochanter minor and a part of the brim of the acetabulum removed.	July 8, 1862.	Death 4 months after the operation from suppuration and diarrhœa.	Hulke.	Med. Times and Gazette, May 2, 1863.
24	M.	7¼		Some time.	Much reduced by bedsores and suppuration.	Removal of the head, neck, and trochanter major; acetabulum extensively diseased and gouged.	July 11, 1862.	Death in 4 months from continuance of the diseases diarrhœa, suppuration, and bedsores.	Krackowizer.	Trans. of the N. York Pathological Society, and operator.
25	F.	8	R.	2 years' standing.	Pale and feeble with sinuses discharging.	Removal of the bone below the trochanter major; acetabulum gouged.	Sep. 16, 1862.	In 6 months could bear his weight firmly upon the foot, with 3 inches shortening.	Heath.	Lancet, Nov. 14, 1863.
26	M.	11	R.	18 months' standing; from a fall.	Extreme emaciation, with three sinuses near the joint.	Removal of the head and neck; acetabulum pared, and the rigid muscles subcutaneously divided.	Sep. 29, 1862.	Went about on crutches in 2 months; walked without any support 6 months after the operation with considerable motion in the joint and ¾ inch shortening.	Raphael.	Operator.
27	F.	7		Some years' standing.	Abscesses and sinuses discharging freely about the joint.	Bone divided between the trochanters; acetabulum not gouged.	Nov., 1862.	Gradually sank from the combined effects of the shock, discharge, and the previously prostrated state, and died.	Buck.	Records of St. Luke's Hospital, New York.
28	M.			..	....	Excision of the joint.	..	Child died about 1 year after from suppuration and abscesses.	Holmes.	Med. Times and Gazette, March 28, 1863.
[illegible]				..	....	Excision of the joint.	..	Child died 2 months after the operation; quiescent tubercles were found in each lung; pelvis carious, and a pelvic abscess.	T. Smith.	Ibid.

Table of 41 *Cases of Excision of Hip-Joint.*

No.	Sex.	Age.	Side.	Cause and Duration.	Condition at the Operation.	Operation.	Date.	Progress and Result.	Operator.	Authority.
30	F.	7		A fall 2 years before.	Worn with pain and sleeplessness; no sinuses, but a large abscess unopened, and communicating with the joint.	Bone divided between the trochanters; neck and a part of the head absorbed; acetabulum gouged.	1862.	Wound nearly healed in 2 months; 1 year after recovery perfect and walked without support.	Sayre.	Operator.
31	M.	15	R.	2½ years' standing	Sinuses communicating with the joint; constitutional disturbance moderate.	3¾ inches removed in order to excise all the diseased bone.	1862.	In 11 months boy recovered with a useful limb, walked well with a cane, and 2¼ inches shortening.	Carnochan.	Operator.
32	M	8	L.	..	Suppurating sinuses behind the trochanter; much emaciation.	Removal of 4 inches of bone; acetabulum perforated.	Jan. 31, 1863.	Died of pneumonia on the 14th day after the operation.	Sayre.	Records of Bellevue Hospital, N. York, and operator.
33	M.	14	L.	..	Sinuses discharging profusely; emaciation and hectic.	Bone divided between the trochanters; acetabulum perforated and gouged.	Feb. 17, 1863.	Death at the end of two weeks of exhaustion.	Sayre.	Operator.
34	M.	6½	R.	Fall 1 year before.	Suppuration and crepitation in the joint; hectic.	Removal of the head and both trochanters; acetabulum gouged.	Feb. 20, 1863.	Wound nearly closed in 2 months; one year after the operation hip sound, good motion, and patient could walk without any support, with but ½ inch shortening.	Voss.	Records of the Jews' Hospital, New York, and operator.
35	M.	13	R.	3 years' standing.	Sinuses discharging profusely; joint swollen and painful; considerable emaciation.	Head, neck, and both trochanters removed; acetabulum and os pubis carious and gouged.	May 1, 1863.	Died 70 days after the operation from exhaustion, the disease continuing.	Krackowizer.	Ibid.
36	F.	7½	L.	11 months' standing; from a fall.	Favourable.	Bone divided between the trochanters; acetabulum perforated and gouged.	June 23, 1863.	Began to walk with crutches 6 weeks after operation, in 3 months walked without support, with 1½ inch shortening and great freedom at the joint; 15 months after the operation wound perfectly firm and walked well without any support.	Krackowizer.	Operator.
37	M.	10	L.	2 years' standing; from a fall.	Miserable.	Removal of the bone between the trochanters; acetabulum perforated and gouged.	July 3, 1863.	Wounds entirely closed at the end of 5 months, and in 1 year could walk without support; motion at the joint almost natural; shortening 1 inch.	Sayre.	Operator.
38	M.	16		1 year's standing.	Sinuses discharging; much emaciation.	Removal of the head, neck, and enough of the shaft to make 5 inches; acetabulum gouged.	Aug. 16, 1863.	In 9 weeks the wound entirely healed, and the boy went about on crutches, becoming "fat, healthy, and happy."	Gant.	Lancet, Nov. 28, 1863.
39	F.	19		For some time.	Much exhausted.	Head excised.	..	Died in 9 days of acute necrosis of the entire shaft.	Gillespie.	Edinb. Med. Journal, May, 1864
40	M.	31	L.	2 years' standing.	No sinuses about the joint; patient in a very good condition.	Bone divided just above the trochanter minor; acetabulum diseased, but not gouged.	Jan. 23, 1864.	Died on the 24th day after the operation of pyæmia.	J. R. Wood.	Records of Bellevue Hospital, N York, and operator.
41	M.	9	R.	Fall 5 years before.	Extreme emaciation; several sinuses discharging.	Bone divided between the trochanters; acetabulum perforated; the design of the operation was merely palliative; acetabulum not gouged.	June, 1864.	All the symptoms were alleviated, but suppuration and diarrhœa caused his death at the end of 2 months.	Sayre.	Operator, and author.

Of the 41 cases collected in this table, 23 or 56.09 per cent. recovered, and 18, one in $2\frac{5}{18}$ cases, or 43.90 per cent., died. Of those patients recovering, 12 required no support in walking, 4 walked well with the aid of a cane, 2 with crutches, and one with a splint. Two are mentioned as walking, but we are not informed whether support was required or not; while in the two remaining—it is said of the first, that "in 6 months the parts were soundly healed with $1\frac{1}{4}$ inch shortening," and of the second, "in 6 months could bear the weight firmly upon the foot with 3 inches shortening."

There were 26 males, 14 females, and in one the sex is not stated. Of the 26 males, 15 or 57.69 per cent. recovered, and 11 or 42.30 per cent. died. While of the 14 females, 8 or 57.14 per cent. recovered, and 6 or 42.85 per cent. died, which leaves the very small balance of .55 per cent. of recoveries in favour of the males

The average age of the patients recovering was $9\frac{11}{23}$ years, and of those terminating fatally $11\frac{8}{9}$ years. The oldest patient was a man 34 years of age, who died of pyæmia, while the youngest were two children $3\frac{1}{2}$ years old, one of whom died of tubercular meningitis 39 days after the operation, and the other recovered. Of the whole number, 15 operations were upon the right side, 13 upon the left, and in 13 this point is not stated.

Of those upon the right side 9 or 60 per cent. recovered, and 6 or 40 per cent. died; on the left 8 or 61.53 per cent. recovered, and 5 or 38.46 per cent. died; there is, therefore, 1.53 per cent. of recoveries in favor of the left side.

The supposed cause of the disease is stated in 20 cases. 19 were from falls or injuries of a similar nature, and one from severe exercise and exposure.

The acetabulum was gouged in 24 cases, of these 16 recovered and 8 died. The acetabulum was not gouged in 5 cases, 4 of these died and one recovered. The acetabulum was perforated in 8 cases, 4 died and 4 recovered.

The causes of death after the operation were as follows: exhaustion 11, tubercular meningitis 1, shock of the operation 1, diphtheria 1, tetanus 1, pyæmia 1, pneumonia 1, acute necrosis 1.

Let us briefly compare these results with the analysis of Dr. Hodges' table: Of his 111 completed cases 53 or 47.74 per cent. were fatal. Of our 41 cases, 18 or 43.90 per cent. died. This shows a difference in mortality of 3.84 per cent. in favour of our table, which, as a mere coincidence, is precisely that which was found to exist at the knee joint.

Of 133 excisions of the hip-joint in Dr. Hodges' table, 89 were in the male, and 38 in the female. In the 41 preceding cases, 26 were in the male and 14 in the female; these taken together make in all 179 operations, of which 115 or 64 24 per cent. were in the male, and 64 or 35.75 per cent. in the female. By the same calculation 63.88 per cent. of the whole number of excisions of the knee joint in both tables, were in the male, and 36.11 per cent. in the female; from which it will be seen that both of these operations are about twice as frequent in the male as in the female.

The average age of those who recovered after this operation was found to be considerably less than that of those who died; the same fact was observed in excision of the knee joint. Our table agrees with Dr. Hodges' in making the operation about as frequent upon one side of the body as upon the other, and further, shows but a trifling difference in the mortality of the two sides. The knee joint, however, appears to differ in this respect from the hip, as in the examination of our 56 cases, the operation was found to be much more frequent, and much less fatal upon the left side.

The origin or cause of the disease is stated in 20 cases, 19 of which were clearly traumatic, and one is said to have resulted from severe exercise and exposure; excluding the last case, there still remain, out of the 41 cases, 19, or 46.34 per cent., due to injuries. It will be remembered that in the knee joint it was found that of 56 cases, 13, or 23.21 per cent., were ascribed to falls, slight blows, and kicks.

These facts are very interesting, and certainly stand in opposition to the opinions most prevalent as to the causation of these diseases. Moreover, they not only agree with, but tend to verify and substantiate the views held by the Professor of Orthopedic Surgery in the Bellevue Hospital Medical College, Dr. Lewis A. Sayre, whose well-known familiarity with hip disease entitles his opinion to great respect. In his very able and instructive *Report on Morbus Coxarius*, presented to the American Medical Association in 1860, he says:—

> "The *strumous* origin of morbus coxarius is the drift of all we hear and read about its etiology. Preoccupied with this instruction, the young practitioner, in approaching the bed of his patient, can never fail to construe the emaciated and anæmic condition of the little sufferer into that of strumous disease. Thus age and authority have rendered this doctrine a sort of surgical gospel. * * *
>
> "Not until more attention had been paid to the *local treatment* of the disease have we had any satisfactory results. This fact alone should indicate the errors as to the nature of the disease formerly entertained. For it could hardly be asserted that a constitutional disease could be effectually relieved by merely local treatment. Since this fact became clearly established in my mind, I have been investigating my cases of this disease more closely with reference to its immediate causes. With comparatively a few exceptions, I have been enabled to trace the disordered action to direct traumatic influences. Most of my patients were healthy, some of them even of a robust constitution previous to the commencement of their attacks, and their constitution gave way only when their sufferings became so intense as to deprive them of their nightly rest and appetite, and to render them incapable of enjoying their accustomed out-door exercise. * * * It seems, therefore, that the inevitable effects of the disease have been mistaken for its causes, that the attenuation of the patient, his

anæmia, his vitiated nutrition in all respects have been construed into previously exisiting scrofulous cachexia, originating and characterizing the disease; whereas they were consecutively developed by it, and were therefore results, and not causes of the disease.

"My own clinical observations of these facts stand by no means isolated. The same have been made by other surgeons, both in Europe and in this country. Among others Dr. Bauer, of Brooklyn, whose careful investigations are known to the profession in reference to this subject, has carefully recorded the causes and origin of 143 cases of hip-disease, the result of which he has communicated to me as follows: '131 cases were clearly traced to traumatic causes, mostly applied directly to the hip-joint itself. A large majority of these cases were previously of robust and healthy constitutions. In 9 cases the causes remained doubtful, and in 3 only, the disease seemed to have originated by strictly constitutional causes."

Dr. Hodges found a mortality of 51.72 per cent. to follow those operations in which the acetabulum was gouged, cauterized, or scraped, and but 44 per cent. after those in which the acetabulum was not disturbed, making 7.72 per cent. in favour of non-interference. In our table there were 66.66 per cent. of recoveries after gouging the acetabulum, while of 5 operations in which this cavity was left undisturbed, but one, or 20 per cent., recovered, which leaves 46.66 per cent in favour of gouging the acetabulum.

In conclusion, it only remains to be said, that although excision of the hip-joint is an operation attended with great danger to the life of the patient, it nevertheless promises to preserve more lives and useful limbs, than can reasonably be expected from any other, and less heroic method.

HARTFORD, Nov. 9, 1864.

ART. IV.—*Climate and Diseases of Oregon.* By R. GLISAN, M. D., Portland, Oregon.

THE climate of Oregon, like that of California, is exceedingly diversified; but, as a matter of convenience, may be considered under three divisions—that of the coast, the Willamette valley, and that west of the Cascade Mountains. The coast climate is bounded geographically by the coast range of mountains on the east, and the Pacific Ocean on the west, and lies between longitude 123½° and 124° west from Greenwich, and latitude 42° and 46¼° north.

The following observations, taken under my supervision, exhibit a fair average of this climate:—

Meteorological Observations at Fort Orford, Oregon, latitude 42° 44′ 27″ *N., longitude* 124° 28′ 52″ *W., for one year from August* 1, 1855.

MONTH.		THERMOMETER.							WINDS.								WEATHER.		RAIN & SNOW.		
		Mean temperature.				Range.			Directions, No. of observations.								Days.		Days		Amount in inches.
	Year.	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Range.	N.	N. E.	E.	S. E.	S.	S. W.	W.	S. W.	Fair.	Cloudy.	Rain.	Snow.	
August . . .	1855	56.48	66.29	55.97	59.58	72	50	22	5	0	0	8	18	0	0	62	20	11	1	0	.10
September . .	"	54.83	65.33	56.13	58.76	73	49	24	16	6	1	2	20	1	1	33	20	10	7	0	4.99
October . .	"	52.70	63.58	55.35	56.87	79	41	38	22	0	1	17	14	0	3	20	14	17	7	0	3.52
November . .	"	41.30	53.00	43.80	47.03	61	33	28	27	0	0	33	16	1	0	5	9	21	19	0	14.18
December . .	"	40.67	46.93	41.87	53.15	55	30	25	25	1	1	29	11	8	1	11	7	24	22	1	20.00
January . .	1856	46.16	52.71	48.25	49.04	57	32	25	10	1	5	41	14	2	6	15	3	28	14	0	7.62
February (29 days)	"	43.03	56.10	45.93	48.35	65	33	32	24	0	1	15	8	1	0	36	16	13	9	0	4.67
March . . .	"	46.35	59.35	48.51	51.40	75	33	42	8	1	0	40	4	2	3	21	15	16	8	0	2.21
April . . .	"	47.73	58.26	46.13	50.70	63	31	32	21	0	0	45	0	9	3	6	12	18	14	0	11.30
May . . .	"	52.06	61.35	50.64	54.68	69	46	23	33	0	0	27	0	2	0	23	19	12	9	0	3.20
June . . .	"	55.73	63.40	52.93	57.02	69	45	24	32	0	0	18	0	0	0	20	21	9	8	0	1.85
July . . .	"	56.32	63.97	53.87	58.05	69	50	19	44	0	0	8	0	0	0	7	24	7	4	0	1.38
Annual . .					53.71												180	186	122	1	75.02

The most remarkable feature in the foregoing table is the quantity of rain. Over 75 inches in a year will seem to many of your readers almost incredible. More fell in the month of December than falls in the city of San Francisco, California, in twelve months. When stationed at Fort Arbuckle, in the Choctaw nation, in 1851, there chanced one night to be a very heavy rain for that section of country. The weather, that ever fruitful topic of conversation, being under discussion the following morning, some one inquired of me how much rain had fallen the previous 24 hours. I remarked, "An inch and a half." "Pshaw!" replied an old pike standing near, "your tarnal thing must have leaked; for I put my bran-new boot outside the wagon on going to sleep last night, and when I got up this morning it was chuck full, and I know my boot is one foot long and two high, which would make three feet." It is perhaps needless to add that I did not use a boot for a rain-gauge.

Although there is some good land along the Oregon coast, it is not well adapted to farming, the summers being too cool for the cereals to mature. However, it affords fine grass the whole year round, for sheep, horses, and cattle.

Potatoes, cabbage, and a few other garden vegetables grow well. Apples, plums, &c., can be raised a few miles back from the ocean. The uncultivated fruits are thimble, salalle, black, blue, salmon, and whortle, berries. There are two varieties of the latter, the black and red; both are small and very acid, and grow on bushes from ten to twenty feet in height.

With the exception of a few prairies, the entire country is an immense forest of fir and cedar, mainly the former. The beautiful liriodendron (so called, not the tulip-tree) and the sweet-scented myrtle are to be seen in a few places.

The foothills abound in the larger species of game, such as bear, deer, and elk. The streams are covered during the fall and winter with ducks and geese, and are full of trout and salmon.

It is the natural home of the Indian. Had it not been for the discovery of gold, the Indians would perhaps be there still. I may remark that gold has been found on the sea-beach along the entire coast; also in various places back in the mountains. Shortly after the first gold discoveries at Port Orford, Coquille, and Rogue River, in 1851 or 1852, there was an influx of a large mining population, the result being a war with the Indians, who were driven from their native homes, and penned up on an Indian reservation.

After the Indian war most of the whites abandoned the country. But the climate is not devoid of interest in a hygienic point of view, as various localities on the coast are now the yearly resort of the settlers of the beautiful Willamette valley. Those residing in and about Salem, and south of that point, visit Yaquima Bay and the mouth of Salmon River; the citizens of Portland and its vicinity go to that part of the coast known as Clatsop, lying just south of the mouth of the Columbia River. This is decidedly the Cape May of Oregon. It is of easy access by steamboats. The *furore* for this favourite bathing-place was so great the past season, that any citizen of Portland refusing to go, or send his family, was looked upon as unworthy a position in fashionable society.

We will now glance at the climate of the Willamette valley. This is bounded on the west by the coast range of mountains, on the east by the Cascade range, on the south by the Calipooya Mountains, and on the north by the Columbia River.

The following table of observations made by me at Fort Yamhill gives an excellent idea of this climate:—

Meteorological Observations at Fort Yamhill, Oregon, latitude 45° 5′ N., *longitude* 123° 32′ W.

1857.	THERMOMETER.							WINDS.								WEATHER.		RAIN AND SNOW.		
	Mean temperature.				Range.			Directions, No. of observations.								Days.		Days.		Amount in inches.
	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Range.	N.	N. E.	E.	S. E.	S.	S. W.	W.	S. W.	Fair.	Cloudy.	Rain.	Snow.	
January . .	35.61	42.87	37.90	38.79	58	9	49	1	0	0	1	21	34	6	10	4	27	19	5	11.86
February . .	39.25	45.25	41.00	41.83	56	32	24	1	3	1	13	11	26	0	13	3	25	21	3	9.03
March . . .	42.22	53.12	46.93	47.42	63	34	29	4	1	1	17	18	20	0	19	11	20	20	3	8.52
April . . .	46.60	66.60	53.26	55.48	81	35	46	5	4	3	7	0	7	36	5	27	3	2	0	.10
May . . .	51.80	66.80	53.22	57.27	91	40	51	1	2	2	3	0	27	13	27	21	10	11	0	1.76
June . . .	52.51	67.41	53.64	57.85	92	48	41	3	0	2	0	0	21	11	37	21	9	6	0	1.28
July . . .	57.50	73.42	55.93	62.28	95	50	45	0	0	0	0	0	18	0	58	24	7	1	0	.05
August . .	51.03	74.09	55.01	60.05	89	44	45	0	0	0	0	0	2	0	60	28	3	1	0	.10
September . .	47.01	69.46	55.20	57.22	87	42	45	0	0	2	0	3	21	3	22	19	11	11	0	1.68
October . .	44.08	63.02	50.19	52.43	76	33	43	0	0	0	4	1	22	12	11	19	12	9	0	1.56
November . .	38.16	50.16	42.48	43.61	60	27	33	0	10	9	7	5	26	5	5	15	15	14	0	7.58
December . .	39.06	46.25	42.03	42.44	56	27	29	0	4	14	5	1	31	4	11	7	24	21	4	14.26
Annual . .				51.38												199	166	139	15	57.78

The Willamette valley is about 100 miles wide and 200 long, and is considered the garden spot of Oregon. It takes its name from a beautiful river running through the middle of the valley, and emptying its cool, clear waters into the great Columbia. The soil of the valley is argillaceous, covered with a thin vegetable mould, and is very fertile. The characteristic rocks are gneiss, granite, talc, sandstone, and quartz; there is no limestone. Its mountain-slopes are already attracting great attention for their mineral wealth. Iron, copper, lead, silver, and gold are soon destined to make a rich home market for the products of the thousands of beautiful farms located in this smiling valley, where but a few years since the Indian warrior roamed in all his savage pride.

Oregon cannot be surpassed for the beauty and sublimity of her mountain scenery. The snow-capped peaks of the Three Sisters, and Mounts Jefferson, Rainier, Baker, Washington, and Hood are plainly visible from all parts of the valley. The land is mostly prairie, with here and there a few clumps of oak, ash, and maple. Fir covers the hills and mountains. The streams are all rapid, cool, and clear. Small grain is the staple product, and yields a more abundant harvest than in most other States in the Union. Drought, flies, or worms are never complained of by the farmers as destroying their wheat. The only drawback is the rust, which makes its appearance to a slight extent once in a few years. It was the custom of the early settlers, and is yet with many of the farmers, to plough the ground and sow a crop of oats or wheat one year, and to depend on the spontaneous productions of the soil for the succeeding two years, the grain springing up during this period without either tilling or sowing, yielding what is called here volunteer crops. This method of farming, however, is somewhat precarious, and the most thrifty of the farmers at present put in their grain as it should be done.

One of the most remarkable features in the valley, is the fine young orchards. There is one on every farm. The trees are mostly of choice varieties—and grafted. A few years ago good fruit commanded such high prices in California, that orchards soon became all the rage in Oregon. Fortunately, the trees had to be obtained from the nursery of a gentleman by the name of Lewellen, who never kept any but the best.

Peaches and grapes do not thrive so well.

Vegetables of almost all kinds can be raised abundantly. They are much earlier here than on the coast, but later, by a few weeks, than in that portion of Oregon lying east of the Cascade range of mountains.

Rain falls in the valley, as well as on the coast, for about half the year—the remainder being comparatively dry—but not so free from rain as the climate of California.

July and August are the dryest—December and January the wettest months in the year.

Thunder is rarely heard, and mostly in winter.

The climate east of the Cascade range of mountains, is totally different from that of the coast and valley. There the winters are moderately clear and cold, with deep snow covering the ground; and the summer hot and dry, with an occasional storm of rain and thunder.

The people of that section designate those of the valley "webfeet"—because of the immense quantity of rain that falls in this part of Oregon during the wet season.

A better idea can be obtained of Eastern Oregon by the following table.

Meteorological observations at Fort Dallas, Oregon, latitude 45° 36′ N., longitude 120° 55′ East.

Meteorological Observations at Fort Dallas, Oregon, latitude 45° 36′ *N.*, *longitude* 120° 55′ *E.*

1857.	THERMOMETER.							WINDS.								WEATHER.		RAIN AND SNOW.		
	Mean temperature.				Range.			Directions, No. of observations.								Days.		Days		
	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Range.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Fair.	Cloudy.	Rain.	Snow.	Amount in inches
January	23 03	32 32	24.61	26.65	52	10	62	0	20	1	1	1	41	3	20	10	21	15	2	7 08
February	36.03	50 71	39.60	42 12	64	25	39	0	6	1	3	2	33	2	31	8	20	10	1	1.85
March	41.45	60 00	47.00	49.48	70	33	37	0	12	1	7	2	21	5	35	14	17	11	1	2 83
April	48.30	68 06	53.13	56.83	77	38	39	1	20	0	9	4	23	13	17	27	3	3	0	.00
May	55.67	73.42	60 26	63 11	96	47	49	0	22	2	2	2	14	17	27	21	10	1	0	.23
June	63.00	74 03	64.86	68 29	101	55	46	4	13	0	3	0	12	14	10	19	11	4	0	1 02
July	65.54	82.19	68.45	72 06	103	60	43	2	15	1	4	0	10	17	39	25	6	4	0	.58
August	61 96	83 51	69 09	71.53	94	56	38	2	19	1	0	0	15	19	29	31	0	0	0	.00
September	54.40	73 63	61 46	63.16	85	41	44	2	12	1	0	0	19	29	24	23	7	2	0	2 70
October	42.77	63.80	52 03	52 86	72	29	43	0	9	3	11	0	36	15	15	20	11	3	0	.25
November	36 23	49.83	40 83	42.29	64	27	37	1	16	11	12	3	16	11	9	14	16	7	0	5 38
December	36.90	47 03	39.51	41 14	64	26	38	1	16	7	12	4	20	18	10	9	22	4	3	7.42
Annual				51.12												221	144	64	7	29.34

Eastern Oregon is essentially a grazing and mining country.

Interspersed along the borders of streams are many small fertile spots. But were the soil more extensively good, the scarcity of water would render its cultivation uncertain, except in the river bottoms—and there the farmers have to contend against frequent inundations. The country is mostly undulating and covered with wild sage bushes, and a kind of bunch-grass, of which stock are very fond. It is almost destitute of heavy timber.

Gold and silver have been discovered throughout this whole region.

The most salubrious of the varieties of climate mentioned is that of the coast. Diseases of the respiratory system are rather more prevalent there than those of any other class—with the exception among miners, soldiers, and Indians, of those of a venereal character.

I have never seen a case of miasmatic fever that originated on the coast. There have been a few secondary cases, however. Wounds heal more kindly there than, probably, anywhere else in the United States.

During the Rogue River Indian war of 1855 and 1856, there was a general hospital established at Fort Orford, under my charge—and, owing to the nature of the climate, I was enabled to practise conservative surgery more successfully than I had ever previously dared to hope.

In the Willamette valley is to be found a sprinkling of nearly every malady prevalent in other parts of the country. But in comparison with other places where I have been able to make any observations on disease—and my experience in this respect has not been limited—it must be admitted that the climate is as healthy as any other.

With the exception of the bottom land near the conjunction of the Willamette with the Columbia River, there are but few sources of malaria.

Being stationed for some years in the southwest, where miasmatic fevers abounded, I was, on passing through Portland, Oregon, eight years ago, unable to properly appreciate the general testimony of physicians here, that malarious fevers were very prevalent in and around this city. Doubtless they were more frequent at that time than at present; and in comparison with the upper portion of the valley, may have been considered "very prevalent;" but surely, no one who has ever resided in the fever districts of our Northwestern or Southwestern States, can believe in the frequency of these fevers in this city during the past three years.

A variety of continued fever, essentially of a typhoid type, is very common throughout the valley in the autumn, winter, and spring. It has all the characteristics of typhoid fever except the rose-red papulæ on the abdomen.

The symptoms in many of these cases indicate an inflamed or ulcerated condition of the mucous follicles of the intestines—but no *post-mortem* examination has ever been made to demonstrate this point. We generally designate it typhoid fever. Diseases of the digestive and respiratory systems are as common in Oregon as in the same latitude on the other side of the Rocky Mountains.

The most fatal disease among children, for several years past, has been diphtheria. It prevailed to an alarming extent throughout Oregon in the years 1862 and 1863. In the summer of the former year measles, and in the latter, scarlet fever raged extensively—and in May and June of the present year, 1864, the smallpox was introduced at the Dalles, on the Columbia River, and spread considerably. Strange to say, that although constant communication was kept up between that village and the city of Portland, the complaint did not make its appearance here—the *Mountaineer*, published at the former place, to the contrary notwithstanding.

The past summer has been comparatively healthy in the valley. It is true that it was rumored lately, as it has been frequently, that some new and terrible disease had made its appearance in certain parts of the agricultural districts. We have learned to place but little reliance in these reports; and usually arrive at the conclusion that the malady is new only to the doctors.

As I have never lived in the third climatic district, specified in this article, it is, perhaps, hazardous to more than allude to its climate. Especially as there is a certain editor in a little town in that part of the country, who believes that whole region to be a second garden of Eden; and anything asserted to the contrary, especially by a citizen of Portland, would be considered by him a *causa belli*, and the unhappy transgressor would henceforth be subjected to his editorial thunderbolts for all time to come.

I will, therefore, simply state that it possesses all the hygienic advantages to be gained by a moderately poor soil, dry atmosphere, and an elevation of several thousand feet above the ocean.

It may not be uninteresting to add a few remarks in regard to the Indians on the coast reservation.

At the close of the Rogue River war, alluded to on a previous page, the scattered remnants of all the tribes of Indians in Oregon, west of the Cascade Mountains, were moved on a reservation lying between the Willamette valley and the Pacific Ocean. The total number being about 5000 souls. For convenience in furnishing them with food, clothing, &c., and in instructing them in the arts of civilization, they were divided into two bands, which were placed in the vicinity of separate Indian agencies.

Here they enjoyed moderate health for a short period only. Diarrhœa, dysentery, pneumonia, consumption, and scrofula, in all its varieties, soon became prevalent, and carried them off in large numbers. Various causes induced this condition of things. Their mode of life was entirely changed. Before coming to the reservation, they had been left free to roam over a large extent of country, in fishing, hunting, and stealing—and in order to gain a subsistence, were compelled to lead a somewhat active life. But, as the white settlers had great dread of them, the Indian Department, aided by a military force, had to restrict their movements to a great extent, after they were brought to the reservation. Being fed and clothed by the United States, they, moreover, had few inducements to exert themselves very much. Once a week they received their rations, which were devoured in about four days—leaving them hungry until the next "issue day." The food was sufficient to have lasted them had they exercised the least moderation. But gluttony is characteristic of the Indian.

Many of them, especially the Rogue River bands, were unaccustomed to the cold rains and chilly winds of their new home.

And last, though not least, among the causes predisposing to their ill-health may be mentioned home-sickness—an intense and constant longing to return to the homes of their forefathers.

Roving tribes of Indians, it is true, with no fixed abodes, have their hearts set on few particular spots, provided they are left free to roam. It is different with those of more limited habitations. They retain a strong and abiding affection for their old fishing and hunting grounds, and for the sacred places where their parents and children have been buried.

According to the terms of the treaty they were entitled to medicines and medical attendance from the government. For a long time they would only call on the doctor on ration day. When asked what was the matter, the almost invariable reply was, "Nica tum tum sick"—"My heart is sick."

They had great faith in their own doctors—generally squaws, who pretended to cure their patients by a species of incantation. Sitting by the sick couch they would sing, cry, scream, tear their hair and clothes, and sometimes those of their patients, and make all sorts of grotesque manœuvres until they could induce the invalid to believe that he was convalescent.

The sick person was often told that he had within him some animal or reptile, such as a rabbit or snake. Under these circumstances the doctress would, in the midst of her performances, suddenly and adroitly exhibit to the astonished patient the animal that had been causing all his distress. Their sleight of hand in this respect was truly wonderful.

If by the recuperative powers of nature, aided in some instances by faith, recovery took place, the doctress was largely remunerated. But when the course of nature determined otherwise, and the sick person died, the doctor or doctress in many cases had to suffer the penalty of death at the hands of the deceased Indian's friends. The Indians also used as remedies various kinds of herbs. These they occasionally gave in the form of infusion or decoction; but generally made use of them as topical applications to wounds. Their success in the vulnerary art was really very good, but was mostly due to keeping the parts clean, a virtue not much practised among them in health.

When severely wounded or injured they called on the physician of the reservation, or the surgeon of the neighbouring military post, for assistance. Mostly the latter. Under these circumstances they stoically submitted to necessary operations. During the four or five years that I was stationed at Fort Yamhill I only performed two amputations on these Indians—one being of a finger, the other of a thigh. Mortification of the leg, following an injury, necessitated the last operation, which was executed whilst the patient was under the influence of chloroform.

He made a rapid and good recovery.

When the Indian doctors, who at first predicted a fatal result, were satisfied that the unfortunate man (a chief of the Santiam tribe) was recovering, they told his wife that he would surely die unless they were permitted to "*mammuck medicine*" for his recovery. Being willing to undergo any sacrifice to save her husband, she promised them all her property, consisting of horses, blankets, &c., if they would get him well again.

Accordingly these impostors screamed, howled, and yelled around her house for about a week, some two miles from where the patient was in hospital.

When the wife was satisfied that he was out of danger, she told her husband what she had done in order to restore him to health again. It seems that he did not participate in her faith in the Indian charlatans, for on hearing her affectionate story he tumbled out of bed, and, seizing a cudgel, commenced to beat his wife most inhumanly.

The hospital steward, hearing the uproar, put a stop to the tragedy.

On the matter being reported to me, I took the necessary steps to prevent the rascals from receiving their promised reward.

Among their methods of cure should be mentioned sweating. The patient is placed in a tightly-closed sweat-house, heated by hot stones, until reeking with sweat, and then plunged into cold water. Hundreds of them are thus killed during epidemics of measles and scarlet fever.

They used counter-irritation and local bleeding to a great extent.

Hot stones applied to the body is a favourite remedy; also scarification by means of sharp stones, pieces of glass, and knives, and sucking with the mouth, which, by the by, is not a bad substitute for the cup. Yet even in this the doctors frequently deceived their patients, by pretending to draw blood through an unbroken skin. In such a case they spat an enormous quantity, which came from their own gums, pricked for the purpose. There were no midwives among them. The mother gave birth to her offspring without assistance, and frequently unknown to her female friends; and went to work immediately thereafter.

I am convinced that many of them lost their lives in this way by hemorrhage, &c. Pendulous bellies and prolapsus uteri were frequently the result of this savage carelessness.

Disease, according to the theory of these Indians, was something material and tangible; a living monster gnawing at the citadel of life, whose actions could be seen by the doctor and thwarted at his pleasure. Hence, the influence of the Indian "medicine man or woman" was supreme. And the reason why they took his or her life in the event of failure in curing the patient, was that they fully believed that the doctor did not desire the recovery of the invalid.

This killing, however, was not an invariable consequence of unsuccessfulness on the part of the doctor. The patient's friends were frequently deterred by superstitious fears that he might haunt them after death; but the "medicine man" employed commonly belonged to some other band, and hence the matter was generally compromised, as in other difficulties between tribes, by presents.

The people of Oregon have the benefit of almost every method of treatment and practice in vogue elsewhere.

In the most unenlightened sections of the State the water-cure and herb doctors stand pre-eminent. In the metropolis, Portland, homœopathy is fashionable. Its only representative here, until lately, has been an old gentleman, who, growing tired of the vicissitudes of mercantile life—in which he had been engaged for many years—came to this city some eight years ago, and embarked in the sugar pill business. His pecuniary success has stimulated competition. Among the regular physicians in the interior bleeding and the administration of calomel are looked upon as being as indispensable in the treatment of the majority of diseases as in the days of Dr. Rush.

In Portland, however, abstraction of blood, except by cups or leeches, is scarcely ever resorted to. Calomel is used but rarely, and with discretion. The fluid extracts, especially Thayer's, are very popular; so are some of the eclectic alkaloids—podophyllin, leptandrin, scutellarine, juglandin, jalapine, and prunine. Some of the physicians, as elsewhere, have hobbies, which they ride for a season and then discard for others. The social and professional *status* of the medical profession here is good.

I may remark, in conclusion, that our consumptive patients are best managed by recommending them to spend the winters in California, in order to avoid our chilly rains and gloomy skies; but to remain in Oregon during the summers.

Californians themselves, afflicted with this complaint, would do well to pay us a visit between the months of April and November, and roam over our beautiful hills and valleys; breathe our pure air; drink the clear, cool mountain water; fish, hunt, walk, and ride; and at the rising and setting of the sun take their stand on some mountain peak, and, looking abroad over the most magnificent landscape in the world, thank God that there are other places besides California.

ART. V.—*Two Cases of Pyæmia, or Purulent Infection, with Recovery; in which the Bisulphite of Soda was administered.* Communicated by WALTER F. ATLEE, M. D.

THE history of the following two cases is communicated because I am fully persuaded that they were cases of pyæmia. They were treated by a new method, from which extraordinary results are said to have been obtained in other countries; and by all other treatment, so far as I have seen, well-marked, undoubted cases of pyæmia have invariably proved fatal.

Nélaton says that *pyæmia is always fatal*, and adds that in the cases of cure which some surgeons suppose that they have seen, they allowed themselves to be imposed upon by certain circumstances which may lead, in these cases, to an error in diagnosis. (*Elêmens de Path. Chirurg.*, vol. i. p. 167.) The authors of the *Compendium de Chirurgie Pratique* (A. Bérard and Denonvilliers) say that the gravity of a disease, the principal condition of which is the infection of a liquid, destined to circulate through and nourish every part of the body, is at once understood—"*such, in fact, is its gravity, that art has so far remained powerless against it.*" (p. 386.)

I have thought it proper to cite these authorities as to the invariable fatality of pyæmia, inasmuch as it is supposed by persons of comparatively small experience and powers of observation to be not unfrequently cured. I have seen, myself, a large number of cases of pyæmia, and the two which are here reported are the only ones that recovered.

The treatment instituted in these cases was in accordance with that first recommended and practised by Professor Polli, and brought to the notice of the profession in this country in the numbers of this Journal for October, 1862 (p. 513 *et seq.*), and for April, 1863 (p. 467 *et seq.*). Professor Polli has succeeded in establishing that not only does sulphurous acid possess the property of arresting fermentation, and neutralizing catalytic action, but that its alkaline and earthy compounds have also the same power, and, moreover, that they can be administered with the greatest impunity, even in large doses. Pyæmia, or purulent infection, which latter name is preferable, though the other must be employed, since it is generally adopted in this country, is a disease that depends essentially on the presence in the blood of an organic poison, which acts as a ferment, and multiplies itself. Until the announcement of the discovery of Professor Polli, no substance was known that could destroy a catalytic poison, without, at the same time, so altering the blood itself, as to render it incapable of performing its vital functions. Bernard has declared that the neutralization of such poisons is impossible. (*Leçons sur les effets des substances toxiques et médicamenteuses*, p. 99.)

CASE I. Reported by Joseph B. Roe, M. D., A. A. Surgeon U. S. A. Ezra Reagles, private, Co. A, 36th Wisconsin, aged 30, by occupation a farmer, was admitted to Ward 3, Satterlee U. S. A. General Hospital, West Philadelphia, Pa., August 20, 1864, from Field Hospital, City Point, Va. Wounded at Deep Bottom Va., August, 16, 1864, by a minie ball, which fractured metatarsal bones of left foot. Patient and wound in good condition at time of admission, and continued so until August 28th, when gangrene set in. From this date until September 4th, the gangrene rapidly spread, so that nearly the whole of the upper part of the foot was involved. Sugar, which had heretofore been so successfully used in the hospital, in the treatment of all gangrenous wounds, was applied at the first appearance of the gangrene, but to no good purpose. The character of the wound and the condition of the patient became such, that it was decided to amputate the foot, which was accordingly done, September 5th, about three inches above the ankle-joint. The patient did remarkably well until September 12th, when he had a violent chill, and complained of severe pain, upon pressure, over the region of the liver. The chills returned on the 13th, 14th, and 15th. The flaps had, by this time, sloughed away so as to leave about two inches of the bones exposed. At the first appearance of the chills one (1) drop of nitro-muriatic acid, in the infusion of quassia, was administered thrice daily, with beef tea, milk punch, &c., until September 14th, when, at the suggestion of Dr. Walter F. Atlee, eight (8) grains of the bisulphite of soda were ordered every four hours. From the 18th the patient commenced rapidly to improve, and no untoward symptoms made their appearance up to November 8th, 1864, when the patient was transferred to Ward A, in consequence of the vacation of Ward 3. The general health of the patient at this time was remarkably good, the exposed bones had exfoliated, and the stump nearly healed.

Case II. Reported by A. A. Smith, M. D., A. A. Surgeon U. S. A. Private John C. Friesman, Co. H, 8th New York Heavy Artillery, aged 51, and by occupation a painter, was admitted from Field Hospital, City Point, Va., August 20th, 1864, with a gunshot flesh wound of both legs, received at the battle near Malvern Hill, Va., August 16th, 1864. The ball—minie—passing transversely through the middle of the middle third of the left leg, between the soleus and gastrocnemius muscles, producing a severe flesh wound; thence through the middle third of the right leg, anterior to the tibia, producing a slight flesh wound, and denuding the tibia of periosteum along the track of the ball. On admission the patient's general health was considerably impaired by the exposure and hardships of active field duty. Wound suppurating very little, and the discharge was of a very unhealthy character. Ordered tonics, stimulants, and water-dressings. Up to October 2d, nothing of importance occurred. The patient's general health seemed to suffer from the suppuration, which became excessive after the twelfth day. On the morning of the 2d he had a severe chill, followed by slight febrile reaction, then a profuse clammy perspiration, and low, muttering delirium; features blanched and sunken. *Oct. 3d, 4th, 5th, 6th.* Heavy chills and delirium. The patient apparently sinking rapidly. *Oct. 7th, 8th.* Chills not so marked; less delirium, and general appearance improved. *Oct. 9th.* A very light chill, and very little perspiration. Immediately after the appearance of the first chill, on the 2d of October, the bisulphite of soda was given in gr. xx doses every two hours, which was continued until the 12th, after which twenty grains were given twice a day until the 1st November, when it was stopped. Milk punch, beef essence, and fʒj of the following mixture every two hours were also given: Quinia sulph. gr. xxiv, tinct. ferri chlor. fʒss, syr. simpl. f℥iss, aqua cinnam. f℥iv. *Oct. 12th.* A slight rigor; suppuration from wound a little more healthy; general appearance decidedly improved, and some desire for food. *Oct. 20th. Decided* improvement; very little suppuration, and the wound granulating; no return of chill, and the mind perfectly clear since the 12th inst. *Nov. 1st.* Able to sit up; wound healing rapidly. *Nov. 17th.* General health much better than when admitted; appetite good, and wound closing rapidly; walks about on crutches.

Art. VI.—*On the Transformation of Alkaline Sulphites in the Human System.* By M. Carey Lea.

In connection with some interesting observations on the physiological effects of the alkaline sulphites when taken into the human system, as made by my friend Dr. W. F. Atlee, it has appeared to me that a brief account of a few chemical examinations made upon the same subject would not be altogether devoid of interest, especially as the indications are that these remedies are destined to play an important part in the relief of certain obscure and fatal forms of disease.

My first experiment was directed to observe, if possible, whether, after the administration of an alkaline sulphite, any free sulphurous acid was eliminated in the stomach; and if so, whether or not this would be reduced in that organ to the form of sulphydric acid or not.

As the gases set free in the stomach are carried off by the breath through the mouth, the following arrangement was adopted: a little very dilute ammonia was placed in a test-tube, and then, through a bent tube, the breath was driven through, in a period of from three to five minutes. The liquid was then tested by a lead-salt for HS, and afterwards with zinc and chlorhydric acid for sulphurous acid, the hydrogen liberated being conducted over paper moistened with a lead salt. Other portions were further examined by boiling with nitric acid and testing with chloride of barium, for sulphuric acid resulting from an oxidation of sulphurous acid.

The first trial was made two hours after swallowing thirty-three grains of bisulphite of soda. Neither the presence of SO_2 nor of HS could be detected by the foregoing methods.

In the second trial, the sulphite was taken in a highly alkaline form. Thirty-three grains of monosulphite of soda in solution with twelve grains of bicarbonate of potash were swallowed, and three-quarters of an hour afterwards the breath was tested as before. No HS could be detected, but there were extremely faint traces of SO_2.

As respects the condition in which a sulphite would pass entirely through the human system, there could evidently be but two alternatives: it must either pass through unchanged, or must undergo oxidation and pass out as a sulphate.

In order to determine the point, the urine was examined. One hundred grains of monosulphite of soda were taken daily, in three doses of thirty-three grains each, and a large number of examinations were made of urine voided at various hours in the day. About two ounces were used in each trial, and the examination was made to ascertain whether any alkaline sulphite could be detected.

When the administration of the salt was first commenced, only very faint traces of sulphite could be detected, almost the whole appearing to be oxidized in the system; but on each succeeding day, the tests indicated an increasing quantity of sulphite, until large black stains were regularly obtained upon lead-paper, by exposure to the sulphydric acid obtained by the reduction of the sulphite.

In view of the powerful deoxidizing properties of the sulphites, it seemed probable that their administration would cause a depression of circulation, and observations were made to ascertain whether this would be the case.

To afford a term of comparison, an observation was made on the state of the pulse two days before commencing the treatment.

	Pulse at end of morning.	Pulse at end of afternoon.
Nov. 11. Before the treatment was commenced .	78	73–4
" 13. Treatment commenced	81	74
" 14. " continued	81	75

The sulphite seems thus to have been without effect, or if any result was produced, it was rather a slight acceleration than a depression.

The conclusions to be drawn from the foregoing—at least so far as one case is capable of leading to conclusions—are that: 1st, when sulphite of soda is taken into the stomach, no sulphydric acid and a mere trace of sulphurous acid are evolved in the free state; 2d, that whilst the greater part of the sulphite is oxidized in passing through the system, some portion escapes this transformation, especially after the first few days of regular administration, and appears in the urine as unaltered sulphite; and 3d, it would seem to be indicated *in this particular case*, that one hundred grains a day is as much, or more, than is capable of transformation in the system, and, therefore, of exercising its particular function, since even the whole of that was not found to have undergone oxidation. As the sulphite is often given with great advantage in much larger doses, I draw the last conclusion with great reservation, and not decisively. It seems probable (as indicated in a case which Dr. Atlee has mentioned to me, and which is published, p. 84) that very much larger doses are supported easily, and given with advantage. As the excess, if any, does not appear to be hurtful, I do not wish to be understood as arguing against the administration of the amount now deemed proper. This point, however, in its bearing upon actual practice, seems to deserve examination.

Further, the fact that a substance so readily oxidable as a sulphite, can be taken up by the circulation, and pass through it, unoxidized, as repects any portion of it, and be eliminated unchanged by the kidneys, appears to be very remarkable. It was, however, proved by too many separate and decisive experiments to be left in any doubt.

Finally, I may remark to those who may wish to repeat these experiments, that unless proper precautions are taken the reactions are easily missed, at least in those instances where the amount of unchanged sulphite voided is very small. My first trial was made on a few drachms of liquid, and I failed to get any reaction. On the following day, by using several ounces, I obtained a faint but unmistakable reaction, and this with each succeeding day became more and more pronounced. The materials should be placed in a flask with a narrow and very long neck. A small lump of zinc is to be introduced, and lastly a few drops of pure chlorhydric acid, enough only to cause a very slight action, accompanied by an almost imperceptible effervescence. A piece of bibulous paper, moistened with solution of acetate of lead, is to be inserted into the neck of the flask, so as almost to close it. The whole is then to be set aside for several hours, after the lapse of which the paper is to be examined for the characteristic stains of sulphide of lead.

It is to be observed that there are two forms in which sulphur may find itself in the urine, apart from any direct administration of substances containing it. It is always present in the form of saline sulphates. Upon these substances nascent hydrogen has no reducing effect. But sulphur is contained also in albumen, which in certain forms of disease may be present in the urine. The formula of albumen, according to Liebig, contains three equivalents of sulphur, amounting to nearly two per cent. It appeared to me to be a matter of interest to determine whether albumen was capable of giving up a portion of its sulphur to the reducing action of zinc and chlorhydric acid, and thus to settle the question whether its presence could embarrass the investigation as to the presence of sulphites. A considerable quantity of albumen was introduced into a flask and exposed to the action of zinc and chlorhydric acid for many hours. An almost imperceptible stain was found upon the lead paper. Now the ingestion of one hundred grains of sulphite per day—less than the usual dose—I have found to be capable of charging the urine so heavily, with undecomposed sulphite, that lead-paper is visibly darkened in a few seconds, and by longer exposure becomes perfectly black. Whilst, therefore, albumen seems not entirely incapable of acting upon lead-paper, its influence is not such as to disturb the applicability of the test, inasmuch as an aqueous solution certainly containing ten times as much as could be found in a like bulk of albuminous urine, gave only almost imperceptible indications.

PHILADELPHIA, November 21, 1864.

ART. VII.—*Permanganate of Potash as a Remedy for Diphtheria.*

By LOUIS MACKALL, Jr., M. D., Georgetown, D. C.

HAVING used for several months past the permanganate of potash as a remedy for diphtheria, and being convinced of its great efficacy, I feel justified in calling the attention of the profession to the use of this agent in this fatal and hitherto unmanageable disease.

After using faithfully all the remedies both general and local which have been extolled for the cure of diphtheria, and having seen so little good result from their use, I had lost in great measure all faith in such remedies, and had come to the conclusion that the best treatment was to support the patient with nourishment and the free use of stimulants. On reading, in the January number of the *American Journal*, an article by Dr. Samuel Jackson on the therapeutical application of a solution of the permanganate of potash and of ozone, it occurred to me that this agent might be beneficial in the treatment of diphtheria. Shortly afterwards I had an opportunity of making a trial of it in a severe case. A young girl about eleven years of age was seen by me after being sick several days. The tonsils, soft palate and fauces were covered with an ash-colored deposit; the glands beneath the jaw were much swollen, with frequent pulse and hot skin; she was treated for several days with chlorate of potash and the tincture of the chloride of iron. Muriatic acid and tincture of iron in equal parts, were applied locally. But finding the disease on the increase, I changed this treatment and used the permanganate of potash both internally and as a local application, the latter in the proportion of ʒj to water Oj. She took a teaspoonful every three hours of the strength of ʒj to water Oiss. On the second day after beginning this treatment, the improvement was very marked, and she speedily recovered. The false membrane was detached and the mucous membrane presented a healthy appearance in three or four days.

Since then I have treated all the cases of diphtheria (some fourteen or fifteen) which I have seen with this agent, and am more and more convinced with every case, that we have in the permanganate a most valuable remedy. Such is my faith in its power to arrest the extension of the pseudo-membranous formation, and to remove it when formed, that I now feel little apprehension in any case if called to see the patient before the disease has extended to the larynx or paralysis has occurred. Indeed, in those almost hopeless cases in which it is evident that the disease has reached the larynx, as shown by suppressed cough and voice with paroxysms of intense dyspnœa, I have seen under its use three children recover. With a considerable experience in the disease I had previously known only one child to recover under similar circumstances. These three cases were all of the most unfavourable character; the membranous formation was abundant; the laryngeal symptoms very distressing. In all of the cases I expressed a very gloomy prognosis, as all similar cases with the one exception above mentioned had proved speedily fatal. In these cases I also used emetics, but I think the successful result should be attributed to the permanganate, as I had used emetics in all such cases before without benefit.

When the disease has extended beyond the reach of this remedy locally applied, of course a successful result could not reasonably be expected from its use; but I believe that with this agent we can prevent diphtheria from progressing to a fatal termination provided the cases can be attended to before the larynx becomes involved.

Its tendency to attack the mucous membrane of the pharynx prior to its extension to the larynx is characteristic of diphtheria, and I feel assured from my experience that if the permanganate of potash is used in this stage, that it will not only control its further development but will speedily remove all traces of the disease by restoring the mucous membrane of the throat to a healthy state.

The inferences that it is intended should be drawn from the foregoing remarks are: that if diphtheria arises from a specific cause affecting the whole system, then the permanganate of potash may be regarded as the antidote to this poison ; or if the fatal tendency is thought to be caused by or to be dependent on the local affection of the throat, then the local affection may be removed and the fatal tendency may be obviated by the use of this remedy.

It may be well to state that I have never seen any unpleasant effect from the use of the permanganate even when administered to young infants (the solution should be weakened by increasing the quantity of water to Oij to permanganate ʒj in very young children) ; and I have observed that when locally applied it causes less distress than almost any other remedy.

GEORGETOWN, D. C., Oct. 22d 1864.

ART. VIII.—*Statistics of Ovariotomy for the years* 1860–61, '62, *and* '63. *Including* 150 *cases*. By E. R. PEASLEE, M. D., LL. D.

THE following collection includes only the cases of ovariotomy which have been *published* during the four years above mentioned. I have, therefore, to regret the omission of the more recent cases of several ovariotomists in this country, and especially of those of Dr. W. L. Atlee, whose individual experience would so much enlarge this list.

In an appendix to his translation of Kiwisch's *Treatise on Diseases of the Ovaries*, Mr. J. Clay, of Birmingham, collected *all* the reported cases of ovariotomy up to the commencement of the year 1860, amounting to 425 completed operations. The following collection is, therefore, a continuation of his, up to the beginning of the year 1864, and includes 150 cases. I have omitted several cases reported too soon after the operation to give certain information as to their result; and have included no case in which the operation was not completed. The few cases not before reported, I obtained directly from the operators themselves. Some of the following cases are too meagrely reported to be of any statistical value, except so far as the result is concerned; and it is hoped that future reporters will be more explicit. I have included the most important practical points under specific heads; and shall allude to others also in the analysis which follows the cases.

EXPLANATION OF ABBREVIATIONS. *Journals referred to.*—"A. J. M. S.," American Journal of the Medical Sciences. "Lancet," London Lancet (American edition). "A. M. Times," American Medical Times, N. York. "M. T. & G.," Medical Times and Gazette, London. "Bost. M. & S. J.," Boston Medical and Surgical Journal. "N. Y. S. M. S. Trans.," Transactions of N. York State Med. Society. On 2d column, "M." indicates married, and "S" single. On 3d column, "Mon." monocystic, and "Pol." polycystic tumour. *Causes of Death.*—"Per.," peritonitis; "Hem.," hemorrhage; "Sh.," shock; "Ex.," exhaustion; "Sept.," septicæmia; "Col.," collapse.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
Dr. Roemer, Va., A. J. M. S., Apr. '60.	L., 38, M.	Pol. 25 lbs.; 3 y'rs 4 months.	Tending towards a fatal issue.	No a. mentioned.	Double lig. & ped. kept outside.	Nothing unfavourable.	Recovered. Sat up on 38th day.	Ligatures removed on 20th day.
Dr. Henwood, C. W., A. J. M. S., Apr. '61.	—— 38, S.	—— 7½ lbs.	......	......	....	....	Recovered.	Went home in seven weeks. No anæsthetic used.
Mr. Erichsen, Lancet, April, '61.	H. F., 63.	Rapidly increased.	Digest'n disturbed and great uneasiness.	Extensive adhesions.	do.	Almost unceasing sickness; increased by opium.	Died of ex. in 4 days.	
Mr. Bryant, Lancet, April, '61.	Mary E., 30, M.	12 months.	Excellent health, as always hitherto.	......	Do. A needle passed thro' the ped.	Peritonitic symptoms, controlled by opium for 48 hrs.	Died, per. 78 hours.	
Mr. Nunn, Lancet, April, 1861.	H. E., 20, S.	Polycystic.	......	Very firm; tapped 3 times.	Clamp.	....	Died, per. 89 hours.	Bloody serum in the per. cavity, and a coagulum of several ounces.
Mr. Curling, Lancet, April, '61.	—— 18, S.	Rap. increasing tumour.	Well nourished.	......	Double lig & ped. kept outside.	Very comfortable over first night; changed next morning	Died col. in 28 hours.	Bloody serum, but no clots. No peritonitis.
T. Smith, Lancet, Sept '61.	—— 34, S.	....	Health quite broken down.	......	Clamp.	Progressed well for 4 days.	Died sud. of ex. 4th day.	Much turbid serum. No blood; slight peritonitis.
Do. do.	P., 44, M.	2 years pol.	......	Tapped 5 times.	Do. lig. bro't outside.	Favourable.	Recov.; left in one month.	Lig. had not come away in four months.
Do. do.	H., 35, M.	Bet. 2 and 3 years; large size. Monocystic.	......	......	do.	Violent per. came on first night.	Died, per. in 24 hours.	Whole peritoneum internally inflamed. Granular kidneys.
Do. do.	S., 29, M.	Rap. increasing. Polycystic.	......	Adhesions; deliv. 6 mos. before; had been tapped.	do.	Great pain for sev. days in region of adhesions.	Recovered; convalescent in 3 weeks.	Extensive and firm adhesions to ilium & abdominal walls.
Do. do.	Eliza E., S.	Dense fibrocystic. "Had been known to have existed upwards of a year."	......	Much ascitic fluid.	Double lig. cut close and left.	No bad symptoms.	Recovered; incis. healed in 5 days.	No medicine, but 30 drops of laudanum.
I. B. Brown, Lancet, Jan. '62.	L. H., 21, S.	2 years, pol. 17 pints.	......	No adhesions; twice tapped.	Clamp.	Do. do.	Recovered.	Clamp removed on 4th day, and ped. returned.
Do. do.	F. W., 19. S.	2 years, pol. 14 pints.	"General health very good."	No adhesions; Never tapped.	do.	"Sickness and sympts. of per. on second day.	Recovered.	Clamp removed on 4th day; operation lasted but ten minutes.
Do. do.	C. S., 46, M.	6 years pol. 1 lb. 11 oz.	"Miserable looking, but improv'd after 2d tapping."	Twice tapped; one adhesion in direction of liver.	Clamp removed 4th day.	Suffered much pain from flatus 2 days after operation.	Recovered.	Did not gain fast.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size, and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
I. B Brown, Lancet, Jan. '62.	M. A. M., 50 M.	"Mass of honeycomb cysts;" 3 years; 6 lbs. 14 oz.	Nervous and desponding temperament.	Firm adhesions to fundus uteri.	4 double lig. returned outside.	"Nothing rallied her."	Died, sh. in 49 hours.	Ped. too large for clamp. Sev. vessels ligated.
Do. do.	M. T., 23, S.	Over 2 years; pol.	General health good.	No adhesions; never tapped.	With callipers.	No bad symptom.	Recovered.	
Dr. Litchfield, Lancet, June, '62.	E T., 27, M.	Filled rapidly.	......	Tapped twice; Slight adhes.	Ligatures.	Long in rallying; then troublesome vomiting	Died ex. 8th day.	No peritonitis. Vomiting continued throughout.
T. S. Wells, Lancet, July, '62.	—— 30, S.	Pol.; 2 years.	"A fair case for operation."	"Slight adhes., easily separated."	....	"Diffuse peritonitis."	Died, per. 29 hours.	All the fluid was not sponged out of peritoneal cavity.
T. Smith, Lancet, Nov. '62.	—— 59, S.	38 years; immense size.	......	Numerous firm adhesions.	....	....	Died sh 6 hrs.	
Do. do.	M., M.	Pol.; 2 years.	Great emaciation, quick pulse.	Decided anasarca.	Lig. brought outside.	....	Died ex. 3 d'ys.	"Bad case at the outset."
Do. do.	H., M.	Over 2 years; tumour mostly solid; polycystic.	......	Extensive adhes.	Clamp.	Great irritation, and some hem. from sloughing of large pedicle.	Recovered.	Very large pedicle.
Do. do.	H., 58, M.	Pol.	......	Adhesions.	Small ped. lig. cut close & left inside.	No bad symptom.	Recovered.	
I. B. Brown, Lancet, Jan. '63.	F., 40, S.	....	......	Tapped 3 times; once 50 pts., twice 70 pts.	Callipers; removed on 7th day.	Vomiting of black matter, controlled by Prus. acid mix.	Recovered.	Walked about on 17th day.
T. S. Wells, Lancet, Feb. '63.	—— 43, S.	Polycystic tumour.	Never was strong; œdema of lower limbs.	......	Clamp; lig. afterwards substituted.	Constant oozing of serum; pulse rising to 135; vomiting and sinking.	Died, low per. 40 hours.	No blood nor clot. Fatty liver; liver & spleen large. On these 5 cases of Mr. Wells' the clamp was removed in 36 to 48 hours, except that in 1 case it produced vomiting by traction on the uterus, and was removed in four hours.
Do. do.	—— 32, S.	"Very much appearance of colloid."	......	......	Clamp.	....	Recovered.	
Do. do.	—— 23, S.	Small pol.	......	......	do.	....	Recovered.	
Do. do.	—— 23, S.	Large pol.	Much emaciated.	......	do.	....	Recovered.	
Do. do.	E. W. 17, S.	Large pol.	......	Extensive adhes.	....	Cough and dyspnœa on day after oper.; pulse 120, 140, 160.	Recovered.	Venesection on second day, with marked relief; no blood lost at operation.
Mr. Bryant, Lancet, April, '63.	Ellen D., 31, M.	Monocystic; 2 y'rs.	Much distended; gen. health good.	Tapped twice.	do.	Vomiting, checked by ice & soda water.	Recovered.	Walked about in 17 days.
Mr. Hutchinson, Lancet, May, '63.	S. B., 65, M.	Pol. 3 y'rs; abdomen measured 45 inches in circumf.	Health failing.	"Slender adhes."	do.	A little vesical irritation Quinine and opium.	Recovered.	Left hospital in 30 days.
Mr. Fergusson, Lancet, June, '63.	—— 26, S.	Monocyst.; 4 gall. fluid removed; 6 years.	Health pretty good.	Tapped 6 times in 4 years; slight adhesions.	do.	....	Recovered.	Pronounced convalescent in three weeks.

Operator: and where reported.	Name and age; married or single.	Kind of tumour, size, and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
T. S. Wells, Lancet, June, '63.	A. D., 50, M.	Pol.; girth at umbilicus 41 inches.	Fair health is inferred.	Strong adhes.	Clamp.	No unpleasant symptom.	Recovered.	Discharged on 23d day.
Do. do.	E. B., 12, M.	Pol.; "existed several years." Large tumour.	......	Firm adhesions; never tapped.	do.	....	Recovered; discharged in 23 days	Girth 43 inches; symph. pubis to ensiform cart. 20 in.
Do. do.	J. W., 32, M.	6 years; pol.; 72 pints on tapping.	......	Irreducible prolapsus uteri.	do.	....	Recovered; dis. in 29 days.	Girth 54 in.; symph. pubis to ensiform cart. 36 in.
Do. do.	M. W., 56, M.	Monocyst.; 5 yrs.	......	Adhesions extensive; tapped 3 times.	do.	....	Recovered; discharged in 26 days.	
Mr. Soden, Lancet, June, 63.	M. A. R., 25, S.	Monocyst.; 6–7 mos.	Delicate; never enjoyed robust health; happy disposition.	Most extensive adhes. in neighbourhood of pedicle.	Lig., & fixed outside.	Vomiting, rap. pulse gradual sinking.	Died, low per.	Universal per.; part of cyst left attached to uterus.
Dr. Peaslee, A. J. M. S., April, '63.	E. L. S., 35, M.	Two pol. tumours.	Delicate constitution; much emaciated and debilitated.	Tapped 8 times.	Lig. brought out through incision.	Sept. set in on 19th day.	Recovered; went home on 59th day. Double case.	Sept. overcome by injections into per. cavity for 59 days.
I. B. Brown, Med. News & Lib., Feb. '62.	S. D., 27, S.	Pol. 15 months; 7 lbs. and 22 pints of fluid.	"Much emaciated; gen. health bad."	Tapped twice; strong adhes.	Clamp.	No bad symptom.	Recovered.	One band was ligatured.
Do. do.	K. Y., 18, S.	Pol. bet. 3 & 4 mos.	"General health not good."	Never tapped; extensive and firm adhesions.	do.	Do. do.	Recovered.	A wound in uterus bled freely; secured by 6 silver sutures.
Dr. Hamilton, Am. Med. Times, Ap. '61.	Eliza Dillon, 25, M.	Pol. 9 mos.	Health declining fast.	Strong adhes; tapped twice.	Lig. brought through incis. (ped. was first divided by ecraseur, and bled copiously.)	Did well for 24 hrs., then grad. sank.	Died, 3 days.	No blood; but an offensive purulent fluid.
Dr. Bennett, A. Med. Times, Aug. '61.	Aged 75.	Pol.	Good health, and active.	Some valvular dis. of heart.	Not clearly stated.	No bad symptom.	Recovered.	Oldest patient reported; incision not over 2 inches.
Dr. Fisher, Am. Med. Times, Nov. '61.	M. J., 23, M.	Pol.; about 3 yrs.; tumour not weighed; at time of last tapping 60 lbs. of fluid.	Much emaciated; strength fast declining.	Tapped 5 times.	Clamp.	....	Recovered.	
Dr. Parker, Am. Med. Times, June, '62.	—— 31, M.	Pol.; about 15 mos.	Good health; had suffered but little.	Many adhes; tapped "sev. times."	do.	....	Died col. 24 hours.	Consid. hem. from liver whence an adhesion was detached.
Dr. Sims, Am. Med. Times, June, '62.	—— 30, M.	"Tumour composed of one cyst, on the one hand, and honeycomb texture on the other."	Fair health inferred.	Tapped 4 or 5 times.	Wire lig. to ped. & latter brought outside.	....	Recovered rapidly.	

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size, and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results	Remarks.
Dr. Sims, Am. Med. Times, June, '62.	—— 29, S.	Monocyst.; girth 62 inches; about 5 yrs.	Quite emaciated.	Never been tap'd	Wire lig. to ped. & latter brought outside.	Very troublesome vomiting.	Recovered.	Vom. controlled by small doses of opium.
I. B. Brown, Lancet, Aug. '61.	S. B., 31. M.	Pol.; 4 years.	Health slightly impaired.	Strong adhes. to uterus and blad.; never tapped.	Not stated; prob. clamp.	No bad symptom.	Recovered.	Left hospital in 40 days.
Do. do.	N. L., 48, S.	Pol.; probably about 13 mos.	Fair health.	......	Clamp.	....	Recovered.	Left hospital in 5 weeks.
Do. do.	M. M., 46 S.	Pol.; girth 5½; 2 years.	"Weak and thin."	Tapped 5 times.	do.	Very great sickness.	Died, low per. 48 hours.	Fluid all albumen, under heat.
Do. do.	W., 48, S.	One year; double case; pol. of r. ovary and hard fibrous of left.	"General health not good."	Never much pain	Clamp to right ovary; lig. to left.	Stom. irritable first four days; fed per rectum.	Recovered rapidly.	Sat up in 16 days.
T. Smith, Dub. Quar. Jour., Aug. '62.	—— 50, M.	Two years.	......	But little ascitic fluid.	Lig. brought outside.	....	Recovered.	Rode out in 4 weeks. Lig. came away in 7 weeks.
Do. do.	—— 24, S.	....	......	Exten. ad. to arch of colon.	do.	Danger for 1 week from per.	Recovered.	Violent pain in region of adhesions, on beginning to move about.
Do. do.	—— 30, S.	....	......	No ad.; never tapped	do.	....	Recovered.	Sat up in three weeks.
Do. do.	—— 35, M.	....	......	Strong adhes.; had child 4 mos. before operation.	do.	....	Recovered.	Sat up in four weeks. Lig. came away in 7 weeks.
Dr. Kidd, Dub. Quar. Jour., Nov. '62.	—— 32, M.	....	Emaciated.	......	Lig & stump fastened in incision.	Threatened collapse, then peritonitis.	Died, per. in 23 hours.	This the third case in Ireland; all fatal.
Dr. Roberts, Dub. Quar. Jour., Feb. '61.	Rachel B., 35, M.	....	Emaciated; anxious expression; sleeplessness.	......	do.	Acute bronchitis on 20th day; refused food on 22d.	Recovered.	She rallied on giving food per rectum after 22d day; lig. came away on 16th day.
T. S. Wells, M. T. & G., Dec. '62.	E. W., 24, S.	Monocyst.; 7 lbs.; over 3 years.	"Tolerably well."	......	Clamp.	No bad symptom.	Recovered.	Left hospital on 29th day.
Henry, M. T. & G., Aug. '62.	Agnés W., 21, S.	....	Do. do.	......	Ecraseur; clamp.	Sinking gradually.	Died, sh. 18 hours.	50 oz. bloody fluid in per.; liver 40 oz.; heart 7¾ oz.; both pale and flabby; do. kidneys.
Fergusson, M. T. & G., Oct. '62.	Mary E., 19, S.	....	Pale and thin; respiration embarressed.	Never tapped.	Ligs broug't outside.	Got along well till 19th day.	Died, sept. 26th day.	Foul matter squeezed from incision on 19th day.
Wells, M. T. & G., Sept. '62.	E. F., 20, S.	Pol.; "over 40 lbs."	Extremely emaciated, but cheerful.	Dyspnœa.	Clamp; removed in 5 days.	....	Recovered.	Left hospital in one month.
Do. do.	M. A. D., 43, S.	....	Delicate; "health not very good."	......	Clamp.	....	Recovered.	Left hospital in one month.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size, and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
Pollock, M. T. & G., Sept. '62.	—— M.	Left ovary diseased.	Dropsy rapidly increasing.	Tapped twice; uterus contained a dead fœtus.	Ligs. bro't outside.	Delivered of a dead fœtus and placenta in a few hours.	Died, ex. 36 hours.	After tumour was removed, the uterus was tapped (being gravid) for another tumour.
Hutchinson, M. T. & G., Dec. '62	Sarah R., 50, M.	....	Much emaciated; kept bed 4 mos.	......	Clamp.	....	Recovered rapidly.	
Des Granges, M. T. & G., Sept. '62.	—— 34.	....	Robust, but had much pain.	......	do.	....	Recovered.	
Koeberle, M. T. & G., Sept. '62.	V., 37, M.	Double case.	Good condition; had 4 children.	Tapped once.	....	....	Recovered.	Omentum tied "en masse."
Keith, M. T. & G., Sept. '62.	—— 32, M.	....	Beginn'g to break up.	......	Ped. secured by needle in the wound	Matter discharged between 7 & 17th days.	Recovered.	Some bloody serum was left in per. cavity.
Koeberle, M. T. & G., July, '62.	—— 26, M.	2 years.	Weak and emaciated.	Never tapped; firm adhesions.	....	....	Recovered in 23 days.	Bags of ice kept on the incision for eleven days.
Wells, M. T. & G., July, '62.	—— 35, M.	"Large semi-solid tumour."	Impaired and declining.	......	Clamp.	....	Recovered.	Left hospital in 3 weeks.
Do. do.	—— 25, M.	Large pol.	Pale & emaciated.	......	Ped. secured by a wire, & fastened in the wound.	Fainted from hem. 4 hrs. after operation, the wire having slipped. Opened incision and applied ligatures.	Recovered.	
Nelaton, M. T. & G., July, '63.	—— 26.	Large pol.	Tapped once; failing daily; spirits good.	Slight adhesions.	Clamp.	Vomiting on 3d day. Blister to epigastrium.	Recovered.	Brandy just after the operation.
Stutter, M. T. & G. Dec. '62.	E. H., 23, M.	....	Great emaciation.	......	Clamp; removed on 5th day.	....	Recovered.	Opium suppos. night and morning for 2 days; no food by mouth for 3 days.
Hutchinson, M. T. & G., Oct. '58.	—— 40.	....	Much impaired.	......	Ped. secured in wound.	....	Recovered.	
Crosby, M. T. & G., Aug '59.	S. R., 36, M.	....	Fine condition.	Tapped 12 times.	Ligatures brought outside.	Much vomiting 1st week, and signs of sept. in 2d week.	Recovered.	Signs of sept. removed by turning on side, some pus and 2 qts. serous fluid escaping.
Buckingham, Bost. M. & S. J., Aug. '59.	Abbott, 36, M.	....	......	Dyspnœa; tapped 6 times.	do.	3d day blood oozed around lig., and pulse weaker.	Died hem. 4th day.	A lig. had slipped off; 10 oz. of blood in per. cavity.
McRuer, B. M. & S. J., Dec. '59.	M. J. T., 35, S.	....	Very weak; dyspnœa.	Never tapped.	do.	....	Recovered.	Lig. came away on 43d day.
Jones, M. T. & G., July, '60.	Marg't M., 16, S.	Pol filling rapidly after tapping.	Good health, but losing flesh.	Tapped twice.	Clamp.	Soon very restless; then collapse.	Died, col. & low per. 17 hours.	Whole peritoneum inflamed.
Wells, M. T. & G., Feb. 1860.	E. A., 23, S.	Pol. 25 lbs.	......	No adhes.; tapped 3 times.	Ped. transfixed in incision.	....	Recovered.	Left bed in two weeks.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size, and duration.	State of health.	Adhesions & other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
Wells, M. T. & G., March, '60.	S. M., 33, M.	31½ lbs.; pol.	Quite feeble, but cheerful; nausea often.	Abdomen very œdematous; tapped 5 times; firm adhesions, very.	Ped. transfixed in incision.	Rising pulse, bilious vomiting; great tympanites.	Died, 46 hours; strang. of intestine.	Loop of intestine bet. uterus and abdominal wall.
Wells, M. T. & G., Aug. '60.	—— 17, S.	Pol.; over 2 years; 38 lbs.	Much emaciated.	Tapped 9 times in 2 years; moderately ex. adhes.	do.	No alarming symptom.	Recovered.	Hot linseed poultices for a few days over the abdomen.
Do. do.	—— 26, M.	Pol.; about 25 lbs.	Health pretty good.	Adhes. to cervix and vaginal walls; tapped twice.	Ligs. brought outside.	Had a good night; then tired, and pulse 160.	Died sh. and sept. (?) in 30 hours.	No post-mortem.
Do. do.	—— 41, M.	2 years; pol.; about 26 lbs.	......	Adhesions very extensive; tapped once.	Ped. secured outside.	....	Recovered; left town in 24 days.	Hot poultices as above.
Do. do.	—— 36, S.	Pol.; about 24 lbs.	Thin, pale; pulse feeble.	No adhes.; tapped twice.	do.	....	Recovered in 24 days.	Incision very short.
Do. Dec. '60.	—— 53, M.	Pol.; 56 pts.	......	Very firm and extensive adhes.; tapped once.	Ligature.	....	Recovered.	Occasional enema of opii tinct. gtt. xx. Poultices.
Dr. Tanner. M. T. & G., Dec. '60.	—— 30.	....	"Operation last resource."	Tapped once.	Ped. secured outside.	Nothing unfavourable.	Recovered.	
Wells, M. T. & G., Feb. '61.	E. G., 54, M.	Pol. 17 mos.; about 20 lbs.	Health not much affected.	......	do.	No bad symptom.	Recovered.	Bowels moved spontaneously first evening.
Do. May, '61.	—— 22, S.	Pol. 4 yrs.; 16 lbs.	......	No adhesions.	Ped. transfixed in incision.	Wound sloughed & reopened; tongue black, pulse rapid; nit. acid to wound.	Recovered.	Had had iodine injected.
Do. do.	—— 55, M.	"Semi-solid; about 20 lbs."	Signs of congestion of lungs.	......	do.	....	Recovered.	Much cough during recovery.
Do. do.	—— 42, M.	Pol.	Much emaciated; much vomiting.	Firm & exten. adhesions.	do.	Tol'ble night, sinking next morning.	Died, sept. (?) in 24 hours.	4 to 5 pints reddish serum; no inflammation.
Do. Nov. '61.	—— 31, M.	Pol.; 11 years, more than 50 lbs.	Low health; much emaciated.	Tapped 8 times.	do.	Uncontrollable vomiting.	Died ex.	
Do. do.	—— 27, S.	"Nearly single cyst; 44 lbs. fluid."	Fair gen. health.	Never tapped.	do.	No bad symptom.	Recovered.	
Do. do.	—— 34, S.	Pol.; 55 lbs.	Fair gen. health is inferred.	Extensive adhes.; tapped twice; no adhesions.	Clamp.	Do. do.	Recovered.	Went down stairs in 3 w'ks.
Do. do.	—— 53, M.	....	Do. do.	Ascites.	Transfixed in wound.	Good day & night, then low per.	Died, per. 47 hours.	Extensive per.; no blood.
Do. Mar. '63.	—— 49, S.	....	Suffered a good deal.	Tapped twice.	Clamp.	....	Recovered rapidly.	
Do. do.	—— 53, S.	....	Fair health is inferred.	Never tapped.	do.	....	Recovered.	
Do. do.	—— 25, S.	....	Great suffering.	Do. do.	do.	Symptoms of per.	Died, low per. in 44 hrs.	A pint of serum escaped round pedicle.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size and duration	State of health.	Adhesions and other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
Wells, M. T. & G., March, '63.	—— S.	....	......	Tapped twice.	Clamp probably (not noted).	No bad symptom.	Recovered.	
Curling, M. T. & G., April, '61.	K., 21, M.	....	Emaciated, but cheerful; good appetite.	......	Ped. secured outside.	Well 24 hours, then sinking.	Died, 60 hours low per. and sept.	Had a child while tumour was large.
Hutchinson, M. T. & G., July, '61.	B., M.	One year.	Healthy; never any pain.	......	Not stated	Wound reopened by retching on 3d day.	Recovered; left hospital in 30 days.	Protruded omentum washed and returned on 3d day.
Hicks & Foster, M. T. & G., Nov. '61.	E. B., 20, M.	Mon. 12 months.	Health failing.	Tapped 3 times.	Ped. left inside.	Never rallied.	Died sh. 27 hrs.	Some low peritonitis.
Childs, do. do.	Ellen D., 50, M.	....	Healthy, and well nourished.	Never tapped.	Not stated.	No bad symptom.	Recovered.	
Hutchinson, do. do.	B., 40, M.	One year.	Health rapidly yielding.	Extensive adhes.; never tapped.	Ped. secured outside.	Well first week; began to sink on 2d.	Died sept. on 19th day.	Sev. collections of sero-pus encysted by adhes.; no per.
Maunder, do. do.	M. H., 22, S.	Pol. 6 months.	Good health.	......	Transfixed in wound.	No marked sympt.	Recovered.	Fed by rectum 1st week.
Grimsdale, M. T. & G., Sept. '61.	—— 28, M.	....	......	Tapped once.	do.	No bad symptom.	Recovered.	
Hulme, do. Mar. '63.	S., 38, M.	....	Spare; healthy.	Ad. numerous but slight; tapped twice.	Clamp.	Symptoms of per.	Died per. 9th day.	
Simon, do. Apr. '63.	A. W., 22. S.	....	Health fair.	Tapped once.	do.	Nothing especial.	Recovered.	Clamp removed 3d day.
Bryant, do. May, '63.	Emma C., 32 M.	....	Do.	Tapped once; adhesions firm to liver, stomach, & omentum.	Ped. left inside.	Symp. of per.	Died, per. 22 hours.	Gen. peritonitis.
Gardner, N. Y. S. M. S. Trans. for '62.	S., 40, M.	4 years.	Health fair, but beginning to fail.	Tapped twice.	Clamp to 1 ped., wire to the other.	Well 1 week; then vomiting, sanious oozing, &c.	Died, sept. and low per.	Large coag. in pelvis; ℥x of offensive effusion.
Finnell, Am. Med. T., Oct. '63.	—— 26.	....	"Much run down."	Do. do.	Ped. secured outside.	Symp. of per.	Died, per. 5th day.	
Grafton, do. Aug. '63.	—— 49 S.	Pol. 14 lbs.	Very feeble, and emaciated.	......	Transfixed in wound.	No marked sympt.	Recovered in 52 days.	Great curvature of spine and flexure of limbs. Had not stood for 47 years.
I. B. Brown, Lancet, April, '63.	R., 49, M.	Pol. only 8 weeks.	Health always good before last 8 weeks.	No adhesions; never tapped.	Clamp.	Well 9 days; then sud. became low.	Died, sept. 10 days.	Gen. per. with copious purulent effusion.
Do. do.	E. H., 29, M.	Pol. 3 years.	Had "bearing down" last 3 yrs.	Tapped twice; numerous adhes. to pelvic fascia, top of uterus, and to 6 in. of intestine.	4 clamps.	Vomited much bile 4 days after operation.	Recovered in 6 weeks.	
Do. do.	J. T., 30, M.	Pol. 1 year.	Health good.	Ascites; large adhesion to omentum.	Clamp.	Some vom. of bile.	Recovered.	Adhesion secured by wire, and then divided.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size and duration.	State of health.	Adhesions and other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
I. B. Brown, Lancet, April, '63.	B., 41, M.	6 months; pol.	Health good.	No adhesions.	Clamp.	No bad symptom.	Recovered; discharged in a month.	
Do. do.	H. P., 33, M.	Pol. 10 months.	......	Ascites; tapped once; numerous adhesions.	do.	Never rallied after operation.	Died sh. in 30 hours.	No inflammation; bleeding from torn adhesions.
Do. do.	S. S., 33, M.	Pol. many years.	......	No adhesions; tapped twice.	Ped. tied with three pieces of silver wire, & returned.	Severe attack of diarrhœa & vomt'g.	Died, diarrhœa 26 hours.	Gen. injection, but no effusion of lymph.
Do. do.	T., 38, M.	Pol. 1 year, 55 pts. in main cyst; girth 55 inches. Rapid growth.	......	Adhesions to omentum generally.	Clamp.	....	Recovered; discharged in 3 weeks.	Large piece of omentum tied with wire and cut off.
Do. do.	S. T., 31, S.	Pol. 1 year.	......	Adhesions to intestines in all directions.	do.	Well for 10 days; then erysipelas in left breast, and then in wound.	Died, erysip. 13 days.	Erysip. prevalent in Lond. Hospital at the time.
Do. do.	M. C., 39, S.	2 years; enormous size.	Dyspnœa.	Tapped once; omentum wholly adherent; large piece cut off.	do.	On 8th day feces passed largely through lower part of wound, and slough of intestine also.	Recovered.	The fistula at last closed spontaneously. Torn adhes. bled freely.
Do. do.	S. N., 16, S.	Pol. 3 years; 45 in.	......	Ascites.	do.	....	Died ex. 27 hrs.	
Do. do.	E. H., 28, S.	Pol. 3½ years.	Health good; not much emaciated.	Slight adhesions.	Clamp; removed on 2d day.	No bad symptom.	Recovered.	
Wells, Lancet, Aug. 1863.	M. S., 36, S.	....	Good health inferred.	Adhesions exten. but not firm; tapped once.	do., 3d day.	....	Recovered.	Incision six inches.
Do. do.	E. C., 36, S.	Pol. 4 years; girth 35 inches.	"Not able to sew."	......	do., 8th do.	....	Recovered.	Left hospital in 4 weeks.
Do. do.	—— 26, M.	1 year.	Oper. attempted 1 mo. before, and abandoned on account of adhesions.	Adhesions; tapped 3 times.	No pedicle.	Rallied well; then exhaust'g vomit'g	Died ex. 81 hrs.	℥xl dark red serum, and ℥ij of clot. Slight per.
Do. do.	—— 61, M.	2 years.	......	Very firm ad; one to intestine.	Clamp.	....	Recovered.	Left hospital in 35 days.
Do. do.	S. B., 19, S.	Mon.	Good health.	No adhesions.	Clamp; rem. on 7th day.	Persist. coughing after 2d day; no pain in abdomen.	Recovered.	Left hospital in 30 days. Incision 4 inches.
Bryant, do.	A. G., 25, S.	Mon.	Fresh colour.	Adhesions to omentum; tapped once.	Clamp.	Bronchitis and profuse expectoration.	Recovered.	Incision 5 inches.
Foster, do.	N. P., 38, S.	....	......	Ad. to abm. walls.	Not stated.	Symp. of gen. per.	Died, per. 3d d.	2 or 3 pts. of bloody effusion.

Operator; and where reported.	Name and age; married or single.	Kind of tumour, size and duration.	State of health.	Adhesions and other complications.	Pedicle how treated.	After symptoms.	Results.	Remarks.
Brown, Lancet, Aug. 1863.	C., 55, M.	....	Extremely emaciated, but improved by preparatory treatment.	No adhes.; thoracic organs much displaced.	Clamp; rem. on 4th day.	No bad symptom.	Recovered.	Incis. 3½ inches.
H. Smith, Lancet, Nov. '63.	P., 38, M.	Pol.	Very bad condition; an opening in side discharging pus from a sac.	Tapped twice.	Clamp.	Bloody fluid oozed around ped. on 2d day; urine passed through incis. on 7th day.	Died, ulceration through bladder 20th day.	Ulceration would admit 2 fingers. Deposits of pus over intestines.
Black, do. Oct. '63.	M. C., 35, M.	....	Health good.	Tapped once.	do.	Pain in hip, remov. when clamp was do.	Recovered.	
Brown, do. do.	Young woman.	....	Do.	Extensive adhes.; not strong; never tapped.	do.	....	Recovered.	
Camgee, M. T. & G., Oct. 10, '61.	....	....	......	Universal adhes.	Not stated.	....	Recovered.	
Peaslee, A. J. M. S., July, '64.	E. H., 39, M.	Pol.; 3 yrs. 36 lbs. (Double case.)	Health impaired; good spirits.	Extensive adhes.; tapped 6 times.	Lig. coming out through incision.	Sympt. of sept. after 6th day.	Recovered.	Saved from sept. by injections into per. cavity 135 times during 78 days.
Dr. Conant.	S. F., 37, M.	Pol.; 3 yrs.; 36 lbs.	Impaired health.	Omental adhes.; tapped 5 times.	do.	No bad symptom.	Recovered.	Not reported.
Wells, M. T. & G., Op. Oct. '59.	—— 41, M.	Pol.; 38 lbs.	......	Tapped twice.	....	....	Recovered.	Had a child in 13 months.
Do. do.	—— 87, S.	Pol.; 19 lbs.	......	Firm adhesions.	....	Well for 3 d'ys, then bilious vomiting.	Died ex. 4th day.	
Do. do.	—— 38, M.	Pol.; 53 lbs.	......	Tapped twice.	....	....	Died tetanus 9th day.	
Do. Dec. '61.	—— 50, S.	Pol.; 40 lbs.	......	Tapped 9 times.	....	....	Recovered.	
Do. do.	—— 46, M.	Fibrous tum.; 27 lbs.	......	......	....	....	Died 12th day.	
Do. Jan. '62	—— 47, M.	Pol.; about 30 lbs.	......	......	....	....	Died 8th day.	
Do. do.	—— 32, M.	Pol.; "very large."	......	......	....	....	Died 3d day.	
Do. May, '62.	—— 30, S.	Pol.	......	......	....	....	Do. tet. 13th d.	
Do. do.	—— 41, M.	"Very large;" pol.	......	......	....	....	Recovered.	
Do. June, '62.	—— 28, S.	Pol.	......	Had been injected with iodine.	....	....	Recovered.	
Cooper (Cal.), Lancet and Observer.	....	....	......	......	....	....	Recovered.	
Grimsdale, Brit. Med. Jour., Jan. '63.	—— 28.	....	......	......	....	....	Died per. 6th day.	
Brown, Lancet, July, 1859.	—— 26.	....	Never menstrn'd.	......	....	....	Died.	
Do. do.	—— 45.	Double case.	......	......	....	....	Recovered.	
Do. Oct. '62.	—— 56, M.	....	......	......	....	....	Recovered.	
Dr. Sims.	—— 35.	Mon. very large.	4 mos pregnant at time of operat'n.	Frequently tapped; no adhes.	Ped. secured in the wound.	No bad symptoms.	Recovered.	Safely delivered 5 mos. after operation; and 2 children since.
Dr. Thomas.	Eliza M., 37, S.	Pol. 12 pts. (14 lbs.)	Health rapidly declining.	No adhes.; never tapped; no ascites.	do.	....	Recovered.	Sat up on 12th day.

Analysis of the Preceding Statistics.—Of the preceding 150 cases of ovariotomy, 99, or 66 per cent. recovered; and 51, or 34 per cent. died. Of Mr. Clay's 425 cases, 57 per cent. recovered, and 43 per cent. terminated fatally. I attribute the greater success of the operation during the last four years to recent improvements in the operation itself, and a more judicious after-treatment; both of these advantages having been secured in the cases adduced, since a large proportion of the operations were performed by experienced ovariotomists. I have, however, elsewhere shown that if we select only the recent cases of experienced operators *alone*, we find that over 82 per cent. have been saved by the operation.[1]

I have endeavoured, so far as possible, to deduce from the preceding data, the circumstances which mainly determine the result of ovariotomy; and will consider them under the four following heads:—

1. The condition of the patient when operated upon.
2. The manner of performing the operation.
3. The after symptoms.
4. The after-treatment.

I will, however, premise an analysis of the

Causes of Death after Ovariotomy.—The causes of death in the 51 fatal cases of ovariotomy, were as follows:—

Peritonitis	12	cases		$23\frac{27}{51}$	per cent.
Septicæmia (pyæmia) . . .	9	"		$17\frac{33}{51}$	"
Shock or collapse	7	"		$13\frac{37}{51}$	"
Exhaustion	7	"		$13\frac{37}{51}$	"
Hemorrhage	1	"	nearly	2 "	"
Strangulation of intestine in incision	1	"	"	"	"
Diarrhœa	1	"	"	"	"
Erysipelas	1	"	"	"	"
Tetanus	1	"	"	"	"
Ulceration through the bladder .	1	"	"	"	"
Cause not stated	10	"	"	19.6	"

It is an interesting fact that only 1 out of 51 deaths was attributed to hemorrhage. It is, however, not improbable that some of the deaths attributed to exhaustion were the final result of an oozing of blood too gradual to produce its effects at once. Septicæmia also, probably, in some instances, was produced by the decomposition in the peritoneal cavity of blood thus effused. It would probably not be an extravagant statement if we regard 5 per cent. of the deaths after ovariotomy, as being the result of hemorrhage, either directly or indirectly. From the above analysis it appears that peritonitis, septicæmia, shock, exhaustion, and hemorrhage, together destroy over 70 per cent. of all who die after ovariotomy.

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[1] Paper on Ovariotomy in *Transactions* of N. Y. Academy of Medicine for June, 1864.

I. THE CONDITION OF THE PATIENT AT THE TIME OF THE OPERATION.—The circumstances included under this head are: Her age; the married or unmarried state; the general health; the kind, size, and duration of the tumour; the existence or not of adhesions, and of ascites; and the number of times tapped.

1. *Influence of Age.*—The following table gives the ages in 116 of the cases here collated, and the results of the operation.

Under 20 years. . . .	8 Cases.	50 per cent. recovered.
20 to 25 " . . .	16 "	75 " "
25 " 30 " . . .	13 "	76.92 " "
30 " 35 " . . .	24 "	45.83 " "
35 " 40 " . . .	20 "	80 " "
40 " 45 " . . .	10 "	60 " "
45 " 50 " . . .	7 "	57.14 " "
50 " 55 " . . .	10 "	80 " "
55 + " . . .	8 "	85 " "
not stated . . .	34 "	

Thus the most unfavourable age is under 20; next, from 30 to 35; and the average of the whole decade from 40 to 50 is but 58.82 per cent. of recoveries. From 30 to 35 is perhaps the period in which the effects of child-bearing are most exhaustingly felt, while that from 40—and especially from 45—to 50, is another critical season for women.

On the contrary, the highest percentage of recoveries occur in those above 55 years (85 per cent.); and the average above the age of 50 is $83\frac{1}{3}$ per cent. The average from 20 to 30 years is 75.85 per cent. The oldest patient on whom ovariotomy has yet been performed is Dr. Bennett's, of Danbury, Conn., her age being 75 years. She recovered.[1]

2. *Married or unmarried State.*—Of 116 cases in the preceding list, 64 were married, 52 were single.

Of the married, 38 or $59\frac{3}{8}$ per cent. recovered.
" single, 38 " $73\frac{1}{3}$ " "

3. *General Health at Time of Operation.*—Of 98 cases the general health was robust in 41 cases, impaired in 47 cases, and broken down in 10 cases.

Of those in robust health, 31 or 75.6 per cent. recovered.
" " impaired " 30 " 63.83 " "
" " broken " 4 " 40 " "

This is a point of great practical moment, and should be noted in all future reports. 52 cases out of the 150 are not represented in the above specifications at all; though they included 34 recoveries and 18 deaths. It is my conviction that the most favourable condition under this head is *slightly impaired* health.

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[1] See page 92 of this table.

4. *The kind of Tumour.*—61 of the preceding cases were polycystic tumours, and 11 cases were monocystic.

Of the Polycystic, 42 or 68.85 per cent. recovered.
“ Monocystic, 8 “ 72.72 “ “

Here again we need to include all the cases; since, as just shown, the recoveries in *both* kinds of tumours are above the general average of 66 per cent. of all operated upon.

5. *Size of the Tumour.*—If we arrange the tumours weighing less than 15 lbs., under the head of "small," and the rest of "large," we find that—

Of 6 cases of small tumour, 5 or 83⅓ per cent. recovered.
“ 49 “ large “ 37 “ 86.04 “ “

The figures are here too high, as under the preceding head.

6. *Duration of Tumour after it became appreciable.*—

Of 23 cases of tumour of less than 1½ year, 11 or 47.82 per cent. recovered.
“ 41 “ “ “ 1½ year and over, 31 “ 72.72 “ “

A longer duration generally implies a greater size, a considerable distension of the abdominal parietes, and some impairment of health—all of which I consider favourable circumstances.

7. *The Existence or Non-Existence of Adhesions and Ascites.*—

Of 41 cases of extensive adhesions, 25 or 60.97 per cent. recovered.
“ 10 “ slight “ “ 7 “ 70 “ “
“ 16 “ no adhesions, 14 “ 87½ “ “

Still, I adopt the opinion of Dr. W. L. Atlee, that unless the adhesions are visceral or pelvic, they do not essentially increase the danger of the operation, if performed by an experienced operator.

Only 5 cases are noted of ascites as a complication, and of these 2 recovered, and 3 died. Very likely it did co-exist, however, in some of the cases in which tapping of the tumour was resorted to.

8. *Effects of previous Tappings on Ovariotomy.*—The following table shows the result of ovariotomy in 57 patients who had previously been tapped from 1 to 12 times.

	Once tapped.	Twice tapped.	3 times.	4 times.	5 times.	6 times.	8 times.	9 times.	12 times.
Recovered .	12	11	2	1	2	4	2	2	1
Died . . .	2	10	2	1	2	2	1	0	0

Of the preceding 57 cases, 37, or 64.9 per cent. recovered. This is but 1.1 per cent. below the general average. The recoveries of those who had been but once tapped, amounted to 85.71 per cent. even. I have always regarded a single tapping as favourable on the whole, since it generally implies health slightly impaired, and the other advantages mentioned under a preceding head (No. 6). Repeated tappings, on the contrary, imply much exhaustion in most cases; though not in the three above mentioned as 9 times, and 12 times tapped.

II. THE MANNER IN WHICH THE OPERATION IS PERFORMED.—I shall consider, under this head, only the manner in which the pedicle of the tumour was managed, and the question whether, before closing the incision, the peritoneal cavity was sponged out, and whether the peritoneum was included by the sutures closing it.

1. *Management of the Pedicle.*—I here distinguish two classes of cases.

A. Those in which the *pedicle was left in situ*—whether after applying the double ligature (Dr. C. Clay's method), and which is brought through the lower end of the incision; or, after the ligature is cut close (Dr. T. Smith's method).

B. Those in which the *pedicle is kept projecting externally through the incision*, being maintained in that position either by sutures, needles, or the clamp.

Of 14 cases of the 1st class, 9 or 64.28 per cent. recovered.
" 107 " " 2d " 75 or 70.09 " "

It may, however, be added that the cases in which the clamp was applied were, most of them, operated upon by experienced operators, especially by I. B. Brown and T. S. Wells. Recent facts lead me to conclude, however, that Dr. T. Smith's method will prove to be the best.

2. *Was the Peritoneal Cavity sponged out before closing the Incision?*—I have not included the data for answering this question in my table; but I find (omitting all the cases in which there was no fluid to be removed from the peritoneal cavity) that—

Of 50 cases in which it was carefully removed, 35 or 70 per cent. recovered.
" 18 " " " not removed, 10 " 55½ " "

3. The data for answering the inquiry *whether the peritoneum was included by the sutures which closed the incision*, are also here omitted. I found that—

Of 38 cases in which the sutures or needles were passed through the peritoneum, 27 or 71.05 per cent. recovered.
Of 31 cases in which the peritoneum was *not* included, ... 23 " 74.19 " "

The causes of death, in the 11 fatal cases out of the 38, were not such as to be referred to the penetration of the peritoneum; and I think T. S. Wells' reasons for including that membrane quite conclusive.

III. THE AFTER SYMPTOMS.—Many of the successful cases will be noticed as not having presented a single bad symptom after the operation. It cannot, however, be inferred from the non-appearance of bad symptoms during the first two or three days that the case will recover. The probability of peritonitis is thus diminished, but not necessarily that of septicæmia or of exhaustion.

IV. The after Treatment.—The data on this subject are also omitted in the present statistics. I found the custom of giving powerful doses of opiates after the operation, on the decline in the last half of the quadrennial period; and my conclusion on that point is, *give just opiates enough to allay pain, as it may rise, and to secure sleep, and no more.*

New York, Nov. 15, 1864.

Art. IX.—*Remarks on the Extraction of Foreign Bodies from the Ear.* By D. B. St. John Roosa, M. D., Assistant Surgeon to the New York Eye and Ear Infirmary.

The distinguished Professor of Surgery in the Jefferson Medical College of Philadelphia, in an article which appeared in the October number of this Journal, has advanced views as to the proper method of extracting foreign bodies from the ear, which it is believed do not properly represent the opinions and practices of the greater number of those who have to deal with affections of this organ.

The writer of the present article will, therefore, attempt to set forth reasons for questioning the propriety of the procedure recommended by Professor Gross, and to advocate as the proper method that one which is discarded by the latter writer, viz., syringing with warm water.

Dr. Gross recommends the use of a steel and inflexible instrument, about five inches and a quarter in length, very light and delicate, spoon-shaped at one extremity, and furnished with a little tooth or pick at the other. This tooth admits of an easy insinuation between the foreign substance and the auditory canal; being thus inserted, the body is readily jerked out by a kind of lever movement with the handle of the instrument.

The patient inhales chloroform to the extent of entire obliviousness, and (quoting verbatim), the Italics being ours, the writer says: "*For a number of years past I have entirely limited myself in the extraction of foreign bodies from the ear to the little instrument delineated in the accompanying sketch.* * * *The operation is greatly facilitated if there is a clear light, although this is by no means indispensable.* * * * *No possible injury can be inflicted upon the meatus, much less upon the membrane of the tympanum, if proper caution be used in the management of the pick.*"

The most dangerous part of the assertions here made, for they seem to the present writer dangerous, is that in the second paragraph just quoted; where, in effect, there is said to be no necessity for illuminating the meatus, while manipulating with a sharp instrument passed into it. The use of the instrument recommended by Dr. Gross may be admissible, if a good light can be thrown into the external auditory canal, by means of the direct rays of the sun, or ordinary day light, reflected from a concave glass mirror, attached to the forehead, leaving the hands free for the speculum and the pick; but without such an illumination it would seem to be groping in the dark, a very dangerous way of manipulating, and a cause for much of the malpractice in aural surgery. How easy it would be, in thus doing, to abrade, we will not say perforate the membrana tympani, as a result of not exactly calculating the depth at which the foreign body lay? How easy to grasp or pick into the integument lining the canal, with this delicate instrument? The slightest injuries to these parts may be sufficient, as every surgeon knows, to set up a considerable amount of inflammation. The *tactus eruditus* that will avoid an error of this kind must be very decided, even if the patient be under the influence of chloroform, which is necessary in performing the operation with the pick. In the hands of so skilful a manipulator and operator as Professor Gross, it is undoubtedly true that no injury would be inflicted on the parts; but such an assertion would hardly be justified with respect to the majority of the profession. Cases of foreign bodies in the ear occur for the most part to the general practitioner, who has very rare occasion to examine or treat this organ.

The case-book of every surgeon, and all the works on aural surgery, contain warning instances where great damage has been done to the ear by manipulating in the dark, with delicate as well as rude instruments.

Even the simple probing the ear without illuminating it, an evil practice to which many surgeons are addicted, is often very painful, and generally unpleasant to the patient. We need, for the extraction of foreign bodies from the ear, a method which can be *safely* employed by the general practitioner, who, perhaps, sees very few such cases in a lifetime. Such an one, it is believed, we have at our command, in the use of the syringe and warm water, without an anæsthetic. It is also a pleasant method, and at least comparatively sure. Professor Gross, however, tells us that it is "*often tedious, always disagreeable, and sometimes wholly inadequate.*" As to its tediousness, the present writer has only to say that he has in several instances removed foreign bodies from the ear, such as cherry-stones, peas, wads of paper, balls of cotton, and the like, by means of a very few injections from a three ounce syringe. It certainly cannot be as disagreeable a thing to submit to a syringing of the ear, as to inhale chloroform or ether to a full anæsthetic effect. An anæsthetic will never be needed for the effectual performance of the syringing, unless previous attempts to remove the body with instruments have so frightened and pained the patient as to cause him to dread any approach to the ear.

In regard to the adequacy of this method of syringing, Wilde, Toynbee, and Von Tröltsch all agree as to its being generally sufficient. I have yet to meet with a case of failure (and I employ no other means), in an experience reaching over a considerable variety of cases; some few cases, however, have demanded some time. Moreover, it must be evident from the nature of things, that where there is space enough between the foreign body and the wall of the meatus to allow the pick to be inserted, that a stream of water will also pass, and that its returning wave will be quite as potent and delicate a movement as the jerking one of the pick in the hands of the surgeon. If the body be so wedged in as to leave no space between it and the canal, it is hard to see how the instrument would be of any peculiar service, without great risk of damage to the drum or meatus. In such a case the use of warm water would still be indicated, with a view to relaxing the tissues of the meatus, and thus dislodging the body. If it were a porous substance which we were attempting to remove, the water would easily permeate and dislodge it.

As to Von Tröltsch's proposed method of detaching the auricle from the squamous portion of the temporal bone, to get at the foreign body from behind, Professor Gross is undoubtedly right in stigmatizing it as absurd, but it should be remembered that Von Tröltsch only recommended the procedure in case of a failure with the syringe, and that he has not yet met with a case requiring any other means; with, perhaps, also a Daviel's spoon. His statement is as follows: "If a case came under my observation, where a wedged-in body produced such symptoms, that an energetic treatment for its removal were indicated, and delay as above recommended was not practicable, I should hasten to remove it by an operation," and then he proceeds to describe the operation.

A few words now as to the removal of insects and ear-wax, a subject which is also alluded to in the article of which a review has been attempted. Professor Gross recommends first suffocating insects by dropping in of oil or water, and then treating them as any other extraneous matter, *i. e.*, removing them with the pick or curette. They can, however, be removed by the same manipulation that suffocates them, that is, the injection of warm water. There is no doubt whatever that the intervention of the pick or curette is unnecessary in the case of their entrance into the canal; one or two injections from a small syringe will be sufficient to remove them.

As to plugs of inspissated cerumen, Dr. Gross states: "*Ear-wax, however hard, or however firmly impacted, is more readily removed with such an instrument* (the pick and curette) *than with any other contrivance of which I have any knowledge.*" (We have again Italicized the quoted passage.)

During the past ten months, the writer of this, at his ear clinique at the infirmary, has caused the removal of plugs of impacted ear-wax in twenty-eight cases, with a considerable number at his office, and he has yet to see a failure of the procedure, by means of injections of warm water; neither has he heard any complaint from patients as to the operation being disagreeable. Syringing, where the drum is ulcerated or perforated, however carefully done, sometimes produces troublesome vertigo, but rarely where the canal is filled with impacted wax.

Dr. J. H. Hinton, Surgeon to the Infirmary, has had forty-five such cases, during the same time, at his clinique, and he has authorized me to make a similar statement as to the efficacy of syringing in his cases. Dr. Hinton also remarks, that he rarely uses any other means for the removal of foreign bodies from the ear. As to the safety of the operation, if we may dignify it with that title, compared with the process of mining out the mass with the little pick, each member of the profession will judge for himself. That syringing out a mass of inspissated cerumen is sometimes a tedious operation, will be readily admitted; its tediousness may be avoided, however, by giving the patient an alkaline solution, which he is directed to drop, warmed, into the meatus a few times, during a few hours before the attempt at removal; the mass being thus softened, will come away with a very moderate amount of syringing. Where, however, delay is not practicable, thorough and careful injections will certainly dislodge and remove the mass in the course of five to forty minutes.

The appliances for syringing the external meatus need only be, a thin bowl, which the patient holds firmly under the auricle; close to the integument, a vessel containing clean water for injecting, and an ordinary gutta-percha ear syringe; perhaps it will be of advantage to attach to its nozzle a bit of India-rubber tubing, which can be inserted deeply into the meatus. The auricle should be pulled in a line a little backward and upwards, with one hand, so as to straighten the canal, while with the other, the syringing is conducted. Any other assistances, such as ear-spouts, basins with compartments, will hardly be found necessary.

The rules laid down by Professor Gross, in the case of the suspected or real presence of foreign bodies in the ear, are certainly, in the main, worthy the careful consideration of every practitioner, as we should expect from their author. I have, however, conceived it my duty to protest against the use of his pick and curette, for their removal, believing, as I do, that the more simple plan of the use of the syringe and warm water is always applicable and always safe.

ART. X.—*On the Use of Aniline in Histological Researches; with a Method of Investigating the Histology of the Human Intestine, and Remarks on some of the Points to be Observed in the Study of the Diseased Intestine in Camp Fevers and Diarrhœas.* By J. J. WOODWARD, M. D., Assistant Surgeon U. S. A.

SINCE July, 1864, I have made considerable use of aniline colours in my histological studies, and they have been extensively employed in the investigations carried on under my direction for the microscopical department of the Army Medical Museum. As the use of these colours for the purpose of staining certain parts of the tissues, and thus rendering them more visible, appears to be unknown in this country, and so far as I can learn from the journals accessible to me, is imperfectly understood abroad, I have thought it advisable to make public the method of using them, employed in the laboratory under my direction.

The samples first employed were obtained from Dr. Genth, of Philadelphia, and consisted of a red labelled "Fuchsin" and a blue labelled "Bleu de Lyon, röthlich."

Subsequently similar samples were obtained of J. F. Luhme & Co., No. 556 Broadway, New York, from whom also I received a yellow aniline colour.

At the time my first successful experiments were made I was not aware that any attempts had been made to utilize aniline colours in this manner. Subsequently, however, I observed in the *Quarterly Journal of Microscopical Science*, October, 1864, p. 269, a paper "On Organic Structure as Illustrated by Means of Dyes," by WALTER ABBEY, M. R. C. S., in which it appears that that gentleman has also made use of the aniline colours, though in a different manner and apparently on a different class of subjects; certainly with different results from those which I have obtained.

The paper of Mr. Abbey is, so far as I have been able to learn, the only one yet published which indicates that any attempts have been made in this direction. Still I am not disposed to claim originality in this little matter, as it can scarcely have happened that so obvious a method has been entirely overlooked by the continental histologists.

Mr. Abbey seems to have used alcoholic solutions of magenta and of blue aniline, and to have operated chiefly on vegetable tissues. His results appear to have been as follows, if I have rightly understood his somewhat discursive paper: 1. The magenta solution colours neither cell nor nucleus, but only "those portions of 'formed matter' which come under the head of secondary layers," its staining power being "as great as that of carmine, and still more limited." 2. The alcoholic solution of his second variety of blue aniline, for the first he tells us proved "a lamentable yet instructive failure," may be used as a substitute for carmine, colouring the same tissues as the latter does.

In opposition to these results I have obtained the following, in the case of the animal tissues, in the investigation of which only I have been concerned:—

1st. A solution of either the red, the blue, or the yellow aniline may be made in dilute acetic acid. The red and yellow dissolve most readily, but the blue can be dissolved sufficiently by the somewhat prolonged action of distilled water, and subsequently acidified. These solutions act almost precisely as carmine does; namely, they colour all animal cells and cell derivatives, the nuclei darker than the cells, but do not colour the matrix or intercellular material in which the cells are imbedded. Thus, for example, in ordinary connective tissue the branched cells are delicately tinted, the oval nuclei deeply so; the matrix, whether fibrous or homogeneous, as the case may be, is not coloured. So in the case of muscle the fibres are all coloured, but their nuclei more deeply so.

These solutions are more rapid and more uniform in their action than the carmine solution, and possess the additional advantage of being acid instead of alkaline; the colour produced is also more permanent than that of the carmine solution.

For general use I prefer the solution of red aniline, which is, perhaps, the most satisfactory, from the uniformity of its action.

2d. I have also used simple solutions of these three colours in distilled water. These solutions answer very well where it is desired simply to colour, without at the same time rendering the tissues more transparent.

They are especially desirable where it is intended to colour delicate elements floating in organic liquids. The parts coloured are the same as in the acetic acid solutions.

3d. Ethereal solutions may be employed in colouring preparations which are intended to be mounted in Canada balsam. I have not experimented largely in this direction, but have no doubt from the results obtained in making preparations of diseased intestine, such as will be presently described, and from some few sections of liver, &c., that an extensive application of the ethereal solutions may be made to objects which could not otherwise be satisfactorily shown in Canada balsam.

With these preliminary remarks I proceed to give somewhat in detail the method employed, under my direction, in the investigation of the intestine in camp fever and diarrhœa; my object in making this exposition at the present time being to invite others who may have leisure to repeat the observations on these important subjects.

The earliest detailed investigations into the pathological histology of the intestine in the camp fevers and diarrhœas of our armies during the present war were made by me, at the Surgeon General's office, in the fall of 1862, and a brief sketch of the chief points which I had up to that time established were published a year subsequently in my book on *Camp Diseases* (pp. 103 and 246).[1] These are the only observations on this subject which have hitherto been published, and so far as I have been able to learn they are the only ones which have been made, with the exception of the careful studies which have recently been carried on under my supervision in the microscopical branch of the Army Medical Museum, by Assistant Surgeon E. Curtis, U. S. A. The numerous papers contributed to the Surgeon General's office during the last three years contain no allusions to the subject.

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[1] "Outlines of the Chief Camp Diseases of the U. S. Armies as Observed during the Present War," by J. J. Woodward, M. D. Philadelphia: J. B. Lippincott & Co., 1863.

The process I employed in my early observations was as follows: The portion of the intestine intended for study was pinned out on a flat piece of cork, and permitted to dry in the air at the ordinary temperature; thin perpendicular sections were then cut by a sharp knife. These were soaked out in a watch-glass with distilled water. The slices were then transferred to a weak ammoniacal solution of carmine and soaked for some time to colour the cell nuclei, after which they were treated with diluted acetic acid and studied with a two inch or inch objective for contours; with a fifth, for histological details. Preparations made in this way undoubtedly permit most of the details of the minute anatomy of the diseased intestines to be satisfactorily observed. The method is, however, liable to several objections. The intestine contracts much in drying, and not unfrequently dries quite out of shape, so that sections, though carefully made, often represent very irregular surfaces. It is, moreover, difficult to cut good sections, the layer of the intestine containing the follicles often chipping off before the knife, and the largest section attainable not being much over a quarter of an inch in length. The sections are also always disfigured more or less by oil-drops, particularly in the case of the colon. Moreover, if the sections are preserved for comparison with others, it will be found that the carmine gradually loses its brilliancy of colour and the preparation much of its beauty, the bleaching going on most rapidly if the piece is exposed to the action of light.

After the association of Assistant Surgeon Curtis, U. S. A., with me in these studies a number of experiments were undertaken, partly at his, partly at my suggestion, and a plan was finally arrived at which appears quite satisfactory in its results, and which is at present employed by him in making microscopical preparations for the museum.

As this method was not devised at once, but suggested itself by degrees, and after the failure of many preliminary efforts, it is impossible to state the precise share which either of us had in originating it; it is our joint work, and any credit which may attach to it belongs fully as much to him as to me.

The process is as follows: The piece of intestine selected for study is first boiled with dilute nitric acid, in a porcelain capsule. The solution of nitric acid should be of the strength of two or three drops to the ounce of distilled water. The boiling should be continued from two to five minutes, according to the thickness of the piece.

Boiled preparations do not shrink as much in drying as fresh pieces, and boiling in dilute nitric acid, while rendering the connective tissue transparent, brings out the cellular elements with great clearness. That the boiling does not injure or materially alter the structure, except by the transparency it gives to the connective tissue matrix is easily established by comparison with fresh preparations. The boiled intestine is next pinned out loosely on a flat cork and allowed to dry, after which it is macerated in ether until every trace of fat is removed. For this purpose from twenty-four to forty-eight hours will answer; but it is desirable to allow the piece to remain somewhat longer, as it acquires by the prolonged action of ether a peculiar non-elastic consistency, which greatly facilitates the cutting of good sections.

The sections may be cut by means of any of the machines employed in cutting microscopical sections of wood. That used at the museum is a cylindrical iron table, in the centre of which is a round hole, through which the piece intended to be sliced is protruded by the turns of a screw. Dr. Curtis has devised a little contrivance, by means of which this apparatus becomes very efficient in making intestinal sections. A cylinder of wood is carefully fitted into the central hole of the table, so as to be protruded by the turns of the screw; this cylinder is afterwards split perpendicularly into two halves, each of which is notched at the top and armed with two pins; a piece of intestine, half to three-quarters of an inch long, and a quarter of an inch broad, prepared as above described, is placed in the notch, between the halves of the cylinder, and fixed in position by the pins in such a manner that somewhat more than the eighth of an inch of the breadth of the piece protrudes above the wood. The cylinder, thus armed, is slipped into its place in the table, and pushed up by turns of the screw until the edge of the intestine projects slightly above the surface of the table, when a slice is cut with a sharp razor—subsequently a series of slices are cut with the razor—the thickness of each slice being determined by the number of degrees the graduated head of the screw is turned. The piece of intestine and the razor should both be kept wet with ether during the operation. By this process perfectly clean handsome perpendicular slices, half an inch to three-quarters of an inch long, and of extreme thinness, may be cut through the whole thickness of the intestine. Two methods may now be adopted for preparing these slices for examination.

I. If it is desired to make a permanent preparation, the thin section is transferred to an ethereal solution of red or blue aniline, and after soaking for twenty-four hours is transferred to turpentine, and finally mounted in Canada balsam. Preparations made in this way have the advantage of permanency, and if successfully made are very beautiful for study with low powers (two inch or inch objectives); but the minute structure is no longer recognizable. The outlines of the follicles of Lieberkühn, of the solitary follicles, of the muscle of Brücke, the submucous connective tissue, the muscular and the peritoneal coats are easily recognized, and any decided structural changes, such as enlargement of the solitary follicles, ulceration, &c., are admirably displayed. The view is the more intelligible, as the different structures receive very different tints, and are thus all the more readily discriminated. But the cell elements of the follicles, the connective tissue cells, the fibres and nuclei of the muscle, &c., cannot be seen in slices thus preserved, which are, therefore, fit only for the demonstration of the general outlines of the minute anatomy of the parts involved.

II. To make preparations suitable for study with the highest powers of the microscope, the sections, cut as thin as possible, should be soaked out in a feeble solution of red, purple, blue, or yellow aniline, in dilute acetic acid. The soaking should last from twenty-four to forty-eight hours, and the coloured solution should not be strong enough to give too deep a tint in this time. The sections thus prepared should be mounted in the mother liquor, in glycerine, or in Deane's preservative mixture of glycerine and gelatine. Perhaps pure glycerine, rendered slightly acid with acetic acid, and tinged with aniline, is the best material for mounting these sections.

Sections thus preserved, if covered with a sufficiently thin glass cover, may be studied satisfactorily with the highest powers of the microscope. I have in my possession sections cut by Assistant Surgeon Curtis, three-quarters of an inch in length, cut perpendicularly through all the several coats of the intestine, which can be studied with the utmost satisfaction with one of Tolles' objectives, of one-tenth or one-fifteenth of an inch focal length. Such sections are indispensable for the right comprehension of the minuter pathological processes involved in intestinal diseases. They are also magnificent objects for the lower powers (half inch, inch, or two inch objectives), far excelling the balsam preparations in beauty. They are, however, liable to the objection that sooner or later they share the fate of all preparations mounted in fluid.

I will conclude this paper by a brief statement of some of the more important anatomical conclusions to which the studies above outlined conduct.

As to the normal anatomy of the intestine the only points of importance noticed, which go beyond the best received descriptions, refer to the muscle of Brücke. This is, as is well known, a delicate muscle placed just at the base of the follicles of Lieberkühn, between these and the submucous connective tissue. Of this layer Kölliker says,[1] that in the small intestine it, "on account of its being often but slightly developed, is not always readily recognizable in man," and in the colon, "the muscular layer of the mucous membrane of the colon is in man with difficulty perceptible, but is decidedly present."[2]

In our preparations, however, this muscle is invariably well defined, both in the small and the large intestine; perfectly distinct with a one-fifth, it becomes still more clearly defined with a one-tenth or one-fifteenth of an inch objective. It is composed, as described by Brücke (on animals?[3]), of two layers of fibres, one longitudinal, the other transverse.

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[1] Manual of Human Microscopic Anatomy. A. Kölliker. English Edition of 1860, p. 325.

[2] Ib., p. 336.

[3] Ib., p. 336.

I have observed in addition the following points: (*a*). The longitudinal and transverse layers are parallel to the similar layers of the muscular coat of the intestine. That is, the layer next the bottoms of the follicles of Lieberkühn is the circular one, that next the submucous connective tissue the longitudinal.

(*b*). In the colon, at least, the layer next the follicles of Lieberkühn appears to give off teat-like processes of muscle, which connect themselves with the sheaths of the several follicles.

In the pathological domain some of the histological results are the following:—

(*a*). The thickening and softening of the intestine, common to so many of our camp diarrhœas, consist essentially in a multiplication by division of the cells of the submucous connective tissue. Our observations as to the structure of connective tissue accord in the main with those of Virchow, inasmuch as we find in the normal connective tissue corpuscles of the submucous layer branched generally anastomosing *cells*, in which, by means of the aniline dye, the cells can be readily distinguished, with either a one-fifth or one-tenth of an inch objective, from the darker coloured oval nuclei which they contain. We cannot accord, therefore, with those English observers who see in the connective tissue corpuscles only "nuclei," or "nuclear bodies," or ill-defined masses of "germinal matter."

In the thickening and softening of the intestine of diarrhœa the connective tissue cells enlarge and multiply by division—hence the thickening; the fibrous matrix between the cells being meanwhile encroached on, becomes granular and less cohesive—hence the softening. The details of the multiplication are most satisfactorily studied with the higher powers (one-tenth or one-fifteenth). In all essential points the process corresponds with the multiplication of cartilage cells. In extreme cases of softening the cell multiplication invades the elements of the follicles of Lieberkühn and of the muscular layer of the intestine.

(*b*). Two forms of ulceration of the colon have been observed by us in diarrhœa. In the first the ulceration begins in the solitary follicles, which enlarge to little tumours by the multiplication of their cell elements; burst, leaving little ulcers which subsequently extend by burrowing in the submucous connective tissue. The form of ulceration here referred to will be found described in some detail in my *Camp Diseases*, page 103.

The second form of ulceration begins as an abrasion of the surface of the mucous membrane, and subsequently extends without reference to the position or condition of the solitary follicles. This form is apparently the rarer of the two. The method by which the ulcer spreads in this case is precisely the same as in the other variety. There is constantly a progressive multiplication of the cell elements in the neighbourhood of the ulcer, the bottom and sides of which are formed of a layer of small round granular brood cells, the progeny of the normal elements. These granular brood cells (pus corpuscles) constantly float off into the intestinal canal, and the extension of the ulceration is due to the loss of substance which thus results.

(*c*). In the acute dysenteric process which sometimes supervenes during the chronic colitis of our camp diarrhœas, a diphtheritic or croupous layer not unfrequently coats the colon, and sometimes more or less the whole alimentary canal. In these cases sections made as above described show the diphtheritic layer to consist of a mass of brood cells, continuous with the more or less completely disorganized mucous membrane below. In cases of great intensity the follicles of Lieberkühn are pushed apart by the multiplication of the cell elements of the connective tissue in which they are imbedded, the epithelium, lining especially their superficial portions, undergoes cell multiplication, and the orifices of the follicles, the epithelium lining them, and the upper part of the connective tissue in which they lie, are fused together into an inextricable mass of granular cells. Without going into further details at present with regard to this process, the full description of which would require an elaborate paper and careful drawings, I may say that our studies at the present time justify the following general conclusion.

Properly made perpendicular sections leave no doubt that the cell elements of the diphtheritic layer in croupous inflammation of the intestine, are at first the progeny of the intestinal epithelium, or, if the process continues, of the connective tissue beneath and of the epithelium of the follicles of Lieberkühn.

(*d*). The thickening of the patches of Peyer, and of the solitary follicles in camp fever, it is shown by our preparations, is not limited to the closed glands, but involves the submucous connective tissue in which they lie. Sections cut through these patches, afford the amplest evidence that the cellular elements in these thickenings are derived by cell multiplication from the normal elements of the parts involved. The sketch of the process given in my *Camp Diseases*, page 246, corresponds, in all essential points, with our subsequent observations.

It has not been my purpose to offer, in this paper, an account of the pathological histology of the intestine in fever and diarrhœa. This I hope to lay before the profession, in considerable detail, at a future period, in the official report now in the course of preparation. My object at present is simply to invite other labourers to enter the field.

I may state, in conclusion, that several successful photographs of the preparations above referred to have been made by my friends, Assistant Surgeons William Thompson, and William F. Norris, U. S. A.

These photographs are very satisfactory as representations of the views given by moderate magnifying powers (inch and half inch). The extent of the applicability of the process to the high powers has yet to be determined. Experiments are about to be undertaken on this subject, in the department of the museum under my direction.

ART. XI.—*On Hospital Gangrene, and its Efficient Treatment.* By JOHN H. PACKARD, M. D., of Philadelphia.

DURING the past four months it has been my duty to see and to supervise the treatment of a great number of cases of hospital gangrene, occurring in two of the large military hospitals in the neighbourhood of this city. The disorder supervened, in almost every one of these instances, upon gunshot wounds; it presented itself in different grades of severity, and in connection with original injuries varying much in seat and importance. From these extensive observations I have been led to adopt very positive conclusions as to several points in the pathology and treatment of this disease, which I think it but right to lay before the profession.

Let me premise by saying that in so doing it is not my object to claim originality for these views, although some of them have never met my eye in print, nor do I know of their being held by others. But it is very possible that a like experience may have brought some of my fellow-labourers to adopt similar ideas. My own attention was strongly directed to the subject by Lieut.-Col. Le Conte, Medical Inspector U. S. A., who suggested to me a plan of treatment based upon chemical views. This treatment, simplified as experience showed it could advantageously be, assumed the shape to be presently described.

As every one knows, who has read at all upon military surgery, this disease has prevailed in a most frightful form in the British army, and in some of those of Continental Europe, at different times. Such cases as are described by Blackadder, Boggie, and Hennen, by Guthrie and Macleod, have never yet come under my notice, probably, I think, because of the unquestionably superior morale of our army, as well as by reason of the better quality and more regular supply of their food. But no doubt can be entertained of the identity of the disease.

Phenomena.—Any open wound may at any time assume this character. A suppurating surface communicating with the atmosphere seems to be requisite. I have never yet seen an abscess which at the moment of its being opened was the seat of this form of gangrene; nor has it ever occurred to me to see a wholly healed wound break out again with it. Usually the exposure to the air has been of some duration.

Wounds which have healed to a mere point may in a few days spread to several times their original extent. This is most strikingly seen in superficial shell-wounds; in one case of this kind almost the whole outer half of the thigh was thus converted into a ghastly and most offensive ulcer.

When the wound which begins to slough is somewhat wide and shallow, the skin seems to melt away or cave in, as it were, at the edges of the chasm; the epidermis around the margin becoming of a dead pearly white, while the skin below and just outside shows a faint pinkish blush. Another condition is apt to exist in deeper wounds, and especially in sinuses, the connective tissue sloughing so as to undermine the skin, which may or may not look inflamed and unsound.

A grayish-yellow, pultaceous, and horribly offensive material fills up these sores, and flows away like a thick purulent discharge. Microscopically examined, however, it exhibits none of the characters of "laudable" pus; consisting merely of the degenerated connective tissue of the part, with broken-down pus-corpuscles and myriads of minute oil-drops. A few fine fibres, tangled and contorted, are seen, and sometimes here and there a pus-corpuscle less degenerated than the rest.

Swelling is rarely present in a marked degree, unless the wound passes through a fleshy part, such as the arm, calf, or buttock. Another local symptom, especially well pronounced in such cases, is a pungent heat, the temperature being so raised as to be actually quite unpleasant to the hand. If the surrounding atmosphere is at all cool, a steam arises from the surface of the wound. No doubt can be entertained, it seems to me, that this heat is the result simply of the active combustion going on in the part. This rise of temperature I have noticed to be confined strictly to the gangrenous surface. In a wound of large size on the inner side of the thigh, one portion of which was sloughing, while the remainder had been cleaned and was healthy, the difference to the hand held over each part successively was most striking. Pain may be wholly absent, but I have also seen it severe and wearing. The cause of the difference in this respect between different cases I do not know.

It would be difficult to exaggerate the offensiveness of the discharge from wounds in this condition of gangrene. There is a peculiarly nauseous smell over and above that of mere putridity, which I am inclined to attribute to the rancid state of the oil-drops mentioned, as seen under the microscope.

One point remains to be noticed, which is the appearance of the surface of these wounds when they are cleaned out by vigorous sponging. A seeming exuberance of pale granulations, often resembling the surface of a bunch of small hydatids, is presented. But so far from being exuberant, these granular prominences are merely those parts not yet attacked by the sloughing, and they protrude simply because the tissues between them have been destroyed.

This disorder is strictly local, as has been pointed out by Blackadder and others. It may exist for days, and destroy tissue to a wide extent, without affecting the constitutional condition to any appreciable degree. But this is only the case in men previously robust; generally there is more or less irritative fever, according as the system is more or less readily impressible. Other facts, however, show clearly the local nature of the lesion. One wound may be rapidly spreading and highly offensive while another in the same limb is healing kindly. Nay, of the same wound one portion may be granulating and filling up, while the remainder of it is sloughing. Should amputation become necessary, the stump will, if properly made and treated, do as well as in any ordinary case.

When the general system does become implicated, it is by reason of the exhausting effect of the local action, and of pain, and not because there is anything like infection. Perhaps this occurs in some cases which pass into a typhoid state, but it is not common, and certainly not essential.

Causes.—This disease arises epidemically in hospitals, in single wards, or even in separate tents. Having once made its appearance, it spreads rapidly, unless great care is taken in the way to be presently pointed out. It is surely propagated, wherever the same sponges or basins are used indiscriminately for these and for other cases.

But these facts do not account for its origination. No disease could come on more spontaneously, to all appearances, than this often does—none could be more directly traceable to contagion than it is in many cases. It has not yet been observed that any special atmospheric state is apt to attend its appearance, although it seems, as might *à priori* have been expected, that a high temperature favours the putrescent change. Eight or ten very marked cases have, however, occurred under my own notice within the past week (Oct. 20 to Oct. 27) at the Beverly Hospital, among patients in tents, and in a location seemingly free from any possible hygienic disadvantage.

It should be mentioned that the grouping together of grave surgical cases, and especially when these are in any degree overcrowded, seems to favour the breaking out of this affection. But on the one hand this condition may exist without the disease arising, and on the other the disease may be developed where the cases are mild and few. In the spring of 1863, while on duty as a visiting surgeon at the Satterlee Hospital in West Philadelphia, I had under twenty men, all convalescents, in a ward calculated to accommodate fifty, and yet two of the number were suddenly attacked with severe sloughing of their nearly healed wounds.

Prognosis.—This is almost always favourable as regards the saving of life—although a patient worn by previous disease might sink under the accession of this new burden. Again, the wound which assumes the gangrenous state may be so situated as not to admit of the needful treatment; penetrating wounds of the chest or abdomen, taking on this condition, have in my experience been uniformly fatal.

This disease may be fatal to a limb which but for it might have been saved; since it lays bare tendons, bones, nerves, and vessels, often involving the two former, especially in necrosis. Hemorrhage is less common in these cases than would be supposed; it does not necessarily involve amputation, if the artery concerned can be cut down upon and ligated higher up, since the wound so made will do well. Such a course could not be pursued, were the disease less purely local.

Treatment.—There are two indications always present in cases of this kind. First, all the putrid and putrescent matter must be removed from the wound. Secondly, means must be taken to prevent the recurrence of the sphacelation or necrosis, into which the tissues will surely run if not checked.

To fulfil the first indication, the forceps are sometimes all that is needed. My own custom is, to seize a portion of the gangrenous connective tissue, and then twist and roll it up, with traction, until it comes away as far as possible, without too great force. Sometimes it will either break or come away; but if it still resists, it must be cut away with a pair of scissors (a bent or curved pair will usually answer best), or with a knife. This must be repeated again and again, until all the tenacious putrilage has been removed. Rough sponging will still further cleanse the surface.

Chloroform or ether should be used in all cases where there is much pain or tenderness in the sore, or when the wound passes deeply through a thick fleshy part, or is undermined at its edges. *The whole surface of the wound should be reached and cleansed;* and the surgeon has not done his work if he stops short of this.

It will do no harm, after this cleansing, to "disinfect" the wound by washing it with the solution of chlorinated soda, with bromine, with a solution of permanganate of potash, or with any other preparation of the kind. But that this is necessary I do not believe, having seen cases in which it was omitted do perfectly well. The thorough cleansing by mechanical means is the main thing to be attended to.

As to the second indication, it is to be met simply by using as a dressing a preventive of oxidation. Sugar, a hydrate of carbon, which does not give up its oxygen, and which is well known for its preservative powers in the case of meats and fruit, is admirable for this purpose. Powdered white sugar is thoroughly and thickly dusted over the wound, or a thick syrup is put on like any other wet dressing, by saturating clean rags with it. I prefer the former method, the sugared surface being covered with wet lint or rags, kept in place by adhesive plaster, or by strips of bandage tied just tightly enough to keep their place.

Coal-oil, turpentine, or any other carbo-hydrogen, if pure, would answer, but the sugar is less offensive, and does not give pain. A mixture of pulverized charcoal with the sugar answers very well when the odor does not quickly disappear after the cleansing.

I believe that wounds still healthy may be prevented from becoming foul and gangrenous from the neighbourhood of those which are in the latter state, by the use of sugar or any pure carbo-hydrogen as a dressing, and that the spread of hospital gangrene in a ward may be thus checked.

The cleansing may have to be repeated once, perhaps in some cases twice, before the wound assumes a healthy aspect, but whenever the whole surface can be gotten at the first time, this will probably be sufficient. To prevent the spread of the disease by contagion, it is absolutely necessary that each case should have a special sponge and basin set apart for itself, and that these articles should be regularly and thoroughly cleansed after each dressing. Boiling water will effect this.

A few words as to the other plans of treatment in use for this disorder can scarcely be omitted.

Powerful irritants, such as the strong acids or alkalies, or the actual cautery, have been much employed. They depend for any good they may do upon the destruction of the surrounding tissue, and the chance that the ensuing inflammation may not take on a gangrenous form. I have no doubt that in some cases which have come under my observation life has been lost as the consequence of this cruel and random style of practice, although men have recovered in spite of it.

Strong astringents, vegetable or mineral, have been used by some surgeons; the persulphate and perchloride of iron are, I believe, the latest and most favourite of these articles. Although more rational than the former plan, this is an inefficient one in many cases, and is always more or less painful. It is besides much less cleanly than the one I have advocated.

Bromine, so successfully used by Dr. Goldsmith in the western military hospitals in this country, is, like chlorine and iodine, a powerful disinfectant. But I cannot help thinking that it was *the preliminary cleansing*, described by Dr. G., to which the benefit was really due.

Fermenting poultices are simply nasty, and at the same time useless.

Constitutional treatment cannot be expected to check the disease, although it is sometimes indicated by incidental symptoms, and is of course in so far beneficial.

Before closing this paper, it may be right for me to repeat that Dr. Le Conte suggested to me the mode of treatment which has been set forth; his idea was that after the cleansing, the permanganate of potash, in solution, should be thoroughly applied to destroy any remaining putrilage, and afterwards the sugar. Practical experience convinced me of the value of this plan, based upon chemical principles; and it was the want of a supply of the solution of the permanganate, which, compelling the omission of the second step of the treatment, proved it to be unnecessary.

In a notice of Dr. Goldsmith's "Report on Hospital Gangrene," etc., by Dr. W. F. Atlee, of this city, published in this Journal for Jan. 1864, the following remarks occur:—

"We ourselves have had to treat hospital gangrene, and were entirely satisfied with the results obtained by the following local treatment: The putrid tissues were thoroughly removed; infiltration of the unhealthy secretions among the muscles and under the skin was prevented by the proper application of bandages, and a saturated solution of white sugar was poured upon the sore. We were satisfied with the effect produced by this treatment; we are certain that we should not have any reason to be so at another time, or in other places. Circumstances vary cases of disease as of everything else; they make them curable by simple syrup, or by the application of a simple ointment, or so violent as to defy the actual cautery, and nitric acid, and also, it is most likely, bromine itself."

The difference between these views and those set forth in the preceding paper we conceive to be evident. Remove the existing putrilage, and prevent the formation of more, and the disease is cured. I cannot but believe that had my able friend just quoted followed out his theory and his practice to their full extent, he would have given the plan he so sparingly commends his hearty indorsement. Having been myself an observer of the epidemic of hospital gangrene, which occurred at the Satterlee Hospital in West Philadelphia, in July, 1863, and to which allusion is made in the passage above quoted, I know that the disease as it then presented itself, and that which has come under my notice this summer, are one and the same. And I know that worse cases than have yielded to the simple treatment I have advocated did not occur in that epidemic; I believe that worse cases could not anywhere be found unless, among men of debauched lives and ruined constitutions, the local poison were supplemented by an utterly depraved systemic state. Under such circumstances, however, we go beyond mere hospital gangrene, which, as has been before argued, is a strictly local disease; it may even be cured, in spite of other lesions severe enough to destroy life.

I beg to be excused for again urging the conviction that although hospital gangrene may disappear under the use of the actual cautery, of nitric acid, or of bromine, the happy issue is in such case in spite of the remedy, and not in consequence of it; that the *cure* consists in the removal of all the sloughing and dead tissues, and the *prevention* in opposing oxidation by means of a dressing with any substance which either contains no oxygen or which will not give it up. Once more I must express the entire confidence which a very extended observation has led me to bestow upon this theory, and the resulting line of practice.

PHILADELPHIA, October 28, 1864.

ART. XII.—*Modification of Teale's Flap Operation in Amputation.*

By E. P. BENNETT, M. D., Danbury, Connecticut.

MR. TEALE'S operation for amputation by the rectangular flap is in many cases a valuable improvement; but, in my opinion, the long flap in amputations of the thigh should be taken from the posterior part of the limb instead of the anterior. When taken from the posterior part the weight of the limb, as it rests on the pillow, tends to keep the flaps in apposition; the limb rests on a sound surface, and is easily exposed for dressing and cleanliness. On the contrary, when made from the anterior surface (as recommended by Mr. Teale), the weight of the limb rests upon the cut surface, or rather the line of the cut, which tends to separate those surfaces, especially when the patient is restless and moves the limb much. It is also more difficult of access for dressing and cleanliness, two very important considerations. In amputating the limb of a boy aged nine years, of scrofulous constitution, I operated in this manner, making a very nice stump, and completely covering the end of the bone with a good posterior flap, thereby rendering the bone (already predisposed to disease) less liable to take on diseased action. In operating below the knee, of course the flap must come from the posterior surface of the limb, as a matter of necessity.

DANBURY, CONN., October 26, 1864.

TRANSACTIONS OF SOCIETIES.

Art. XIII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1864. *June 1. On the Proper Designation of the Present Epidemic. (Cerebro-Spinal Meningitis.)*—Dr. Alfred Stillé read the following remarks on this subject:—

The different and opposing views which have been taken by Fellows of the College respecting the nature and the appropriate name of the fatal epidemic which has prevailed in this city, and in various other localities, induce me to attempt a more exact determination of both than I was able to do in the few verbal remarks which I made at a former meeting, when reporting a case of the disease which had fallen under my observation.

The scientific nomenclature of diseases is apt to reflect the dominant pathological ideas of the time, while their popular appellations are still more generally derived from the salient symptoms which characterize them. The latter are therefore more constant, in general, than the former. But, as pathological science advances, there is a slow and gradual, but still an uninterrupted, tendency to replace popular by scientific names—names which express the essential constitution of diseases, and their relation, therefore, to others which partake more or less of the same nature, and require, in a greater or less degree, the same methods of treatment. When, therefore, a disease is met with which at first appears to be unlike others, it is natural and proper provisionally to distinguish it by a name representing its most striking and constant phenomenon; but as soon as its nature is determined, and its analogies established, it is equally natural and proper to bestow upon it a title which shall express its affiliation with affections already belonging to the nosological family. Thus, "black tongue" becomes "epidemic erysipelas;" "black leg" is found to be a form of "scurvy;" "summer complaint" is "cholera infantum;" "child-crowing" is "laryngismus stridulus;" and scores, or even hundreds, of similar examples might be cited, if they would not readily occur to every educated physician.

There are diseases *totius substantiæ*, which, from the rapidity with which they invade the whole economy, are concluded, upon good grounds, to originate in the blood, and which more or less confine their effects to functional disorders generated by a vitiated condition of the circulating fluid. There are others which, originating in the same manner, occasion certain special lesions of the solids. There are others, again, which commence by local disorders, and in their progress implicate the whole organism in a greater or less degree. For the last mentioned, a title expressive of their local origin is universally admitted to be appropriate. For the second, it is usual to select a name which shall denote their double characteristic of being a general disease with a specific anatomical character. But in the case of diseases without anatomical localization, a term expressive of their characteristic symptomatic expression forms the nearest approach to an accurate designation.

Typhus fever belongs to the last category. It is the peculiar product of a vitiated state of the blood, the child of famine and decay—of causes, in a word, which tend to prevent the proper renewal of the organic elements of the body, and to cause their retention within the economy as effete organic, and therefore poisonous, matters. It occasions no local lesion, but affects the totality of the organs upon whose action, according to a certain manner, life depends. The name, therefore, which it most appropriately bears, denotes its most characteristic phenomenon, the typhous quality of all its symptoms.

Typhoid fever includes other elements. In addition to a greater or less degree of those which belong to typhus, it presents symptoms of intestinal disease, and corresponding lesions. At one time, it will be remembered, these lesions were held to be the source of the local and general phenomena of the disease, and it was consequently termed entero-mesenteritis. But further observation showed that a fatal termination of an attack might occur before any ulceration of Peyer's glands had taken place, and consequently that this ulceration was a consequence of the essential morbid process of the disease, and not its effect. The theory that the symptoms, as a whole, originated in the intestinal lesion could no longer be supported; and more attention having been directed to the *quality* of the symptoms themselves, which were evidently typhoidal and febrile, the affection acquired the name of typhoid fever. But this step was towards the opposite extreme, for the new name had no reference to the anatomical character of the disease, the alteration of the mesenteric and intestinal glands. A further modification of the nomenclature was therefore demanded. As all my hearers know very well, Dr. Wood proposed the term enteric fever, and its general adoption at home and abroad proves that it expresses better than any former denomination the peculiar double character of the disease. That it is open to criticism, I presume its distinguished author will concede; but it is very certain that it possesses in a high degree the merit of describing the affection to which it is applied—its essential lesion and its prominent symptom. In this, as in all diseases which present a definite anatomical character, the lesion represents the body, or material element of the disease, while the predominant symptom typifies its immaterial and vital manifestation. The two together constitute the most perfect image we can conceive of the disease in its totality.

These remarks will serve to illustrate the principles upon which I think the epidemic disease of the winters of 1863 and 1864 should be named. If it possesses a distinct anatomical character, let that be the ground of its title; if it does not present such a lesion, but, in its stead, a constant symptom, let that symptom confer its name upon the affection. Or if any lesion and symptom can be found in constant union, let them jointly be used to designate it.

A year ago a paper was read, by a Fellow of the College, in which it was stated that the disease was unknown in Europe; that the only account of it to be found is an imperfect description given of it by a number of physicians of New England, between 1807 and 1816; that "Dr. Gallup gave the name of spotted fever to it;" and that "this designation should be retained, inasmuch as it is drawn from one of the most characteristic symptoms of a disorder which offers no peculiar anatomical lesions." I feel very doubtful whether my excellent friend, the author of that paper, would now repeat the statements which he then made, evidently without having consulted the most important original histories of the New England epidemics, and when, as the disease was entirely novel to himself, his knowledge of it had not been thoroughly matured. I propose, by a reference to the published records of its history, to show, 1st, that the disease is not correctly named *spotted fever;* and 2d, that its proper title is *epidemic meningitis,* or, if it be preferred, *cerebro-spinal meningitis.* An enumeration of proofs may not present the interest of a discussion in which affirmative and negative arguments are debated, but, where the question to be decided relates to opinions which have passed into judgments, it is perhaps the shortest and most conclusive method. I shall proceed, then, first, to show by citations from authors who wrote upon the first epidemic in the United States, that they either testify directly against the application of the term "spotted fever" to this disease, or else show that spots were neither an invariable, nor, in some epidemics, even a frequent symptom.

Dr. Nathan Strong, Jr., says "these spots, which in 1806–7 marked almost every case, in 1808–9 were rarely observed." The spots, he also remarks, "gave rise to the name *petechial* or *spotted fever, which has been very generally, though very improperly, applied to the disease.*"

Dr. North, referring to petechiæ, remarks: "This symptom does not occur so often as the name which this disease has obtained would lead one to expect. . . . They are by no means a constant or a frequent symptom." (p. 129.) Dr. Lyman, after describing the mulberry rash, petechiæ, and vibices, adds: "There are, however, some, even among the fatal cases, without any such appearances on the skin." Dr. Woodward, describing a second occurrence of the epidemic, remarks: "An eruption on the skin so seldom appeared, that it could no longer be considered a characteristic symptom of the disease." In the report of Drs. Haskell, Spooner, and Holmes it is stated: "But neither the spots nor the eruptions are inseparably connected with this disease." Dr. Fiske says: "An eruption, which the name of this disease seems to imply, is not a constant attendant upon it." Dr. Arnell testifies that the spots "are not always a constant attendant upon the disease." All of this testimony is contained in the valuable little volume published by Dr. North in 1811.

An earlier treatise, although first published in 1813, is the report to the Massachusetts Medical Society, by a committee consisting of physicians no less eminent than Thomas Welsh, James Jackson, and John C. Warren. They devote a section of their report to discussing "the name and character of the disease," and introduce it with the following words: "This disease has been called spotted or petechial fever. The name has been considered improper by most medical men who have had occasion to remark upon the subject." Among their conclusions from the discussion is this one: "In a very considerable proportion of cases there are not discovered either spots or eruptions. Indeed, if we except some slight appearances on the inside of the elbow-joint, and in similar places, which very probably are to be attributed to sweating, *such spots and eruptions are comparatively rare.*" (p. 158.) In their description of the symptoms of the affection, they also say: "It is not easy to determine in how large a proportion of subjects the skin is affected with spots and eruptions. Under the observations of some gentlemen they have been very rare. One remarks that in eighty cases, among which twenty were very severe, he had seen only four instances in which spots or eruptions of any kind had taken place; and he adds that these had not been the worst cases under his care." (p. 132.)

A scarcely less meritorious paper is entitled "Remarks on the Spotted Fever, as it prevailed in Hartford, Conn., in the Year 1809. By Dr. Henry Fish." It is equally emphatic regarding the inconstancy of the symptom. "Petechiæ, or livid spots, from which spotted fever has derived its name, *did not occur in one case of this epidemic* before death; after it, they were noticed in several." (p. 32.)

A writer in the *New England Journal*, for 1814, has the following remarks: "Considerable misapprehension has arisen from the very name of 'spotted fever;' for though the word *spotted* is a fair equivalent to the word *petechial*, . . . yet spots of a nature to *attract notice* are often wanting in *five cases out of six*, and sometimes in a larger proportion. Hence well-informed practitioners of all descriptions are dissatisfied with the name." (p. 167.) Dr. Gallup, so far from having given this name to the disease, and writing after it had become familiar, says distinctly: "The eruption, which has given a name to this disease, is not a constant attendant. . . . The proportion of cases which had distinct eruptions may be estimated at one-sixth." (p. 232.) Unless upon the etymological principle *in lucus a non lucendo*, it is difficult to comprehend the propriety of calling a disease *spotted fever* which, in a large proportion of cases, presents no spots at all, and which, furthermore, is less a fever than an inflammation, as I shall endeavour presently to demonstrate. The citations which have been made suffice to prove that they who had the best opportunities for witnessing the earlier ravages of the disease in this country, and of becoming acquainted with all its phases, pronounced "spotted fever" a misnomer. It is not less so now than it was half a century ago.

Many years passed away and no return of the epidemic was recorded. Meanwhile, thanks to the publications of Dr. Gerhard and other physicians, the two great idiopathic fevers were distinguished from one another, and established as the only two continued fevers of a grave type occurring in northern latitudes. Meanwhile, too, pathological anatomy became more generally cultivated, and the spinal marrow, whose functions had been previously ignored or unknown, was admitted to be an organ, and not a subordinate one either, but an organ to which the brain itself is, after all, a mere appendage. From 1842 to 1850 the disease we are considering prevailed in the southwestern States. It was there carefully studied by not a few physicians, and although, "in numerous instances," "petechiæ and ecchymoses" were observed, and also "an eruption resembling nettle rash," and "an efflorescence not unlike that of scarlatina," no one appears to have called it "spotted fever."

Finally, the disease having again made its appearance for a short time in Massachusetts and New York in 1850–51, the present epidemic took its rise in the western and central parts of the last named State in 1857, and has since travelled chiefly in a southwardly direction as far, at least, as North Carolina. In this extensive and disastrous progress it has been carefully watched by a large number of physicians, and, so far as I can learn, none have described it as "spotted fever" in any published writing, except Dr. Gerhard, with some other physicians of this city, and Surgeon Wales, U. S. N., stationed at Newport, R. I.

From these notices, although very brief, it must, I think, be concluded that spots of no description, petechial, rubeolous, roseolous, or other can be regarded as characteristic of the disease, and that consequently a name derived from so inconstant a symptom must be regarded as inappropriate. As for the particular name which it is sought to attach to this affection, it is already appropriated by another in which the spots really are a characteristic symptom. I refer to typhus fever, a spotted fever in the true and literal sense of the term, and which more than a century ago received that name in England from several of its historians. In Germany, also, it was known by a title which means exactly *spotted fever* (Flecken Fieber). Petechial and ecchymotic spots do not belong essentially and exclusively to any disease, but to a particular condition of the blood, and perhaps of the solids also, which may be present in almost every affection involving the whole system, as in typhoid fever, the eruptive fevers, yellow fever, scurvy, purpura, and many others. The disease which we are considering would be singular indeed if it ran so remarkable a course and presented such peculiar symptoms as it usually does, without possessing some element better fitted to giving it a name than an eruption which does not exist in half the cases. I proceed, therefore, to inquire what symptoms and what lesions characterize it so frequently as to entitle them to confer a name upon it, and I again resort to the historical documents which have been already cited, requesting particular attention to the fact that at the very time when the disease continued to be called "spotted fever" for convenience sake, its scientific position as a cerebro-spinal meningitis was perfectly well understood.

Dr. North mentions "among the more unusual symptoms of the fever," a "dilatation, and in some a contraction of the pupils of the eyes; blindness in some, in others double or treble vision; a drawing back of the head, with *a kind of clonic spasm of the muscles of the neck.*" President Fitch speaks of "pain and rigidity of the muscles of the neck often, and *the head is in many instances inclined backwards.*" Dr. Woodward, also, describes "*the head drawn back with spasm.*" In the Report to the Massachusetts Medical Society before alluded to, the following symptoms are particularly noticed: "Numbness or total insensibility and paralysis in a larger or smaller portion of the body, which occur often in the first stage of the disease, and continue through its whole course, and even after other symptoms have subsided; . . . and spasms which frequently occur, and shift suddenly in the same manner as the pain does from part to part; sometimes resembling hysteric spasms, *sometimes occasioning the head to be drawn back as in opisthotonos.*" Dr. Fish, of Hartford, describes anæsthesia and paralysis of various parts, blindness, loss of the sense of taste, spasmodic deglutition and paralysis of the pharynx. Dr. Gallup says, "Convulsions or spasms sometimes usher in the disease. That form of tetanus called opisthotonos comes on sometimes towards the close of severe cases; it denotes an alarming case, but is not a fatal symptom."

Finally, Dr. Miner, describing a case which occurred in 1816, uses the following language: "He was as stupid as a block, unconscious of any impression on either of the senses, and so convulsed that it required three or four men to hold him on his bed. His eyes were open, and rolled back, so as to hide the coloured part, *and his teeth were as firmly clenched as in locked-jaw.*" It is added: "His face, arms, legs, and body were literally covered with spots," &c. In his remarks upon this case, Dr. Miner says: "*Spotted fever appears to have its seat and throne in the brain,* to belong nosologically to the passive Phlegmasiæ."

It is evident, therefore, that long before the affection ceased to be called "spotted fever," those of its symptoms which denote serious disease of the central organs of the nervous system had been observed, described, and properly appreciated. It is of course unnecessary to cite in detail analogous illustrations after it had been recognized as a meningitis. Dr. Drake has furnished material for this in the chapter of his work on *The Principal Diseases of the Interior Valley of North America,* which treats of "epidemic cerebro-spinal meningitis" as it prevailed in that region from 1842 to 1850.[1] All the reporters of the existing epidemic have described the same characteristic nervous and spasmodic phenomena (paralysis and opisthotonos), as occurring more or less frequently, and in a greater or less degree, with the single exception of my friend who first presented an account of the disease to this college. Even Surg. Wales, while reporting the Newport epidemic as "spotted fever," does not fail to point out the special implication of the nervous centres, by saying, "The limbs seem paralyzed and are numb, and in some cases even insensible; there is deafness, dimness of sight, or even complete loss of vision. A few have convulsions and opisthotonos." There is, then, no doubt that among the symptoms of the present epidemic, those which characterize meningitis, especially of the base of the brain and of the spinal marrow, were prominent.

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[1] It is proper, also, to direct attention to the history of an epidemic of cerebro-spinal meningitis which occurred in 1849 in the towns of Milbury and Sutton, Mass., and which was described as such by Dr. Joseph Sargent, of Worcester. After relating a number of cases, all of which presented marked cerebro-spinal symptoms, and a number of them a petechial eruption, and after comparing the epidemic he had witnessed with that of 1810 to 1814, Dr. Sargent remarks: "The

Finally, let us inquire what lesions of the nervous centres are found after death from this disease, and in what relation they stand to the symptoms which have been described. The earliest record upon the subject is that of Danielson and Mann in 1806, who, in two out of five dissections, found adhesions of the cerebral membranes, or "a fluid resembling pus, both over the cerebrum and the cerebellum." In these cases the encephalic veins were "turgid with blood," as they also were in the three other cases which were regarded as not presenting evidences of inflammation. But the Report of Drs. Welsh, Jackson, and Warren leaves little to be desired so far as the lesions of the brain are concerned. They describe the copious discharge of blood from the turgid veins of the dura mater when this membrane is incised, and the equally profuse flow of reddish serum from the cavity of the arachnoid. And they, moreover, make a very important distinction between the appearances in two classes of cases; in those, namely, which are fatal within the space of twelve hours from the invasion, and those which perish at a later period; in the former there is only excessive congestion of the large bloodvessels, but in the latter there are other lesions which, they say, "are more conspicuous in proportion to the duration of the disease." "The tunica arachnoides," they proceed to observe, "and the pia mater are remarkably altered in appearance by the effusion of an opaque substance between them, which may be called coagulated lymph, or semi-purulent lymph. This substance is frequently of the yellowish colour of pus, with a consistence between the tenacity of lymph and the fluidity of pus. At other times we see it possessed of the aspect of well characterized lymph. . . . The membranes at the basis present the same appearances as at the vertex of the brain." In another place (p. 159), they say that in severe cases of the disease there is *always* inflammation within the cranium. This extract is sufficient, I presume, to prove beyond doubt or cavil that the "spotted fever" of 1809 was a meningitis. Had the spinal marrow at that time arrived at the dignity of being considered an organ, it would doubtless have been examined. As it was, the condition of this nervous centre remained unknown until the recurrence of the epidemic between 1840 and 1850. The pathological anatomy of the disease was at that time studied very carefully by Dr. Ames, of Montgomery, Ala., and so far as appears, by him alone. It would occupy too much time to quote his very interesting

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spots play but a very subordinate part in all the histories of the epidemic of thirty years ago, that I have seen, and were by no means constant. They gave the name to the epidemic *only because its lesion was not known, and the name was picturesque.* The name also made, perhaps, a part of its terror, and designated a kind of personification. So natural is the superstition which takes fright at severe disease which is 'unknown;' and which also loses half its horror of the same disease when the knife of the anatomist has fixed its locality, even though this do not diminish its danger—a tacit recognition of confidence in science and medical skill." —(*Am. Jour. of Med. Sci.*, July, 1849, p. 40.)

description of the lesions which he found; suffice it to say that, as regards the brain, they were the same precisely as had been observed in Massachusetts thirty years before. To this, however, it is added: "So far as the spinal cord was examined, the lesions, generally speaking, were the same as those met with in the brain in the same cases. The intense vascularity of the pia mater was always present, but the lympho-purulent deposit and the injection of the cord proper were less common than in the brain. The spine was opened in its whole length in one case only." In this case, however, the dura mater is stated to have been thickened, its arachnoid lining divested of its polish; the cervical portions of the cord softened, especially in the white substance, while the converse condition prevailed in the lumbar portion, where more of the gray substance was altered. "A deposit of lympho-purulent matter was found chiefly about the roots of the anterior spinal nerves."

If we come now to the existing epidemic, the testimony is invariably the same wherever dissections have been made. Thus in 1858, at Churchill, N. Y., the post-mortem appearances were observed by Dr. Craig in no less than six cases which proved fatal in less than forty-eight hours from the commencement of the attack: "In all of them, on removing the calvarium, there was observed a turgid condition of the venous system. On removing the coverings of the brain, lymph of a yellowish and greenish hue was detected in the upper sulci of that organ; and in all there were increased quantities of lymph with sero-purulent effusion at the base of the brain and extending down the whole length of the spinal cord. The choroid plexus was also very much engorged, and more or less serous effusion in the ventricles. We also found softening of the base of the brain and upper portions of the spinal cord."

The most complete history of the anatomical characters of the existing epidemic is contained in the Hospital Notes and Memoranda of Dr. J. Baxter Upham, Surgeon in charge of Stanley General Hospital at Newbern, N. C. He dwells, as did the original reporters of the New England epidemic, upon the different grades of the alteration according to the duration of the attack. When death took place within two or three days there were opalescence of the pia mater, increased vascularity of the membranes of the brain and spinal cord, a large effusion of serum mixed with flocculi of lymph, and "an exudation of thick, yellowish, apparently semi-organized lymph on the base of the brain and the medulla oblongata." When the attack had been of one or more weeks' duration, "the deposits on the brain were usually more marked, predominating at its base, around the pons Varolii and in the sulci of the cerebrum and cerebellum, covering the surface of the oblongata, and extending down to the spinal cord, sheathing it, in some cases, throughout its entire length." It is unnecessary to quote more of Dr. Upham's accurate and interesting description. It is enough that what has been read corroborates all the previous histories of the anatomical lesions of the disease, and tallies in every point with the original account of them furnished by the Committee of the Massachusetts Medical Society.

I conclude, therefore, that the description of the disease given by the physicians of New England between 1807 and 1816 was not an imperfect one; that the name of *spotted fever* was not conferred upon it by Dr. Gallup; that this designation should not be retained, inasmuch as spots are not the most characteristic symptom of the affection; and, finally, that it does offer a peculiar anatomical lesion which entitles it to be designated as *meningitis* with the prefix *epidemic* or *typhoid*, as it has been called in Europe by the best authorities ever since its pathological anatomy was investigated and its type understood.

ART. XIV.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1864. *Feb.* 10. *Comminuted Fracture of the Scapula.*—The specimen was exhibited by Dr. JOHN ASHHURST, who gave the following history of the case from which it was derived :—

It had been removed from a man who died at the Episcopal Hospital from a fracture of the petrous portion of the temporal bone.

The spine of the scapula was transversely broken about its middle; and two ragged fractures traversed the body of the bone in a longitudinal direction. There was no union, though life had been prolonged till the fourteenth day.

The injuries had been produced by a fall down a flight of stairs, and the fracture of the skull was indicated during life by facial paralysis, orbital ecchymosis, and watery discharge from the ear.

Feb. 24. *Hypertrophied Cervical and Bronchial Glands.*—Dr. JOHN ASHHURST exhibited the specimen, and read the following history of the case from which it was derived:—

David M., aged 29 years, married, a cooper by occupation, was admitted to the surgical wards of the Episcopal Hospital on January 6th, 1864, on account of tumours on either side of the neck. The right side was affected to a much greater extent than the left. He suffered also from a chronic pruriginous eruption, and was almost entirely bald.

The tumours gave the sensation of enlarged glands, but were semi-elastic, and occasionally seemed more like cysts with firm walls, or deep-seated abscesses than the solid masses which they were afterwards proved to be. During the day he appeared very somnolent, possibly from being kept awake at night by the extreme itching of his skin. He experienced occasional attacks of dyspnœa.

The treatment consisted of the use of iodine or some of its preparations internally and locally, with alkaline baths from time to time. Very slight benefit, if any, was however obtained from these remedies.

After this patient had been in the house about three weeks, attention was called to a broad band of induration, puffy and semi-elastic, on the anterior abdominal parietes, above the umbilicus. There was also some tenderness on pressure. During the night of February 5th, several patches of similar induration appeared over the front of the thorax, accompanied with an erysipelatous blush. The tumour of the right side of the neck had also greatly enlarged, almost closing the right eye, and distorting the mouth. Orthopnœa and dysphagia were also present in an aggravated degree. He died suddenly about an hour after midnight of February 6th.

An autopsy was made thirty-four hours after death with the following results. *Rigor mortis* very slight. Skin much discoloured over thorax and abdomen, and, when cut into, brawny, and the superficial fascia distended with coagulated lymph.

Head not examined.

Neck.—The principal mass of disease was removed from the right side of the neck, and found to consist of several of the cervical glands very much enlarged and hardened. The diseased mass surrounded the great vessels of the neck and the pneumogastric nerve, all of which were necessarily divided in its removal. It was attached to the mastoid process of the temporal bone above, and to the cervical vertebræ posteriorly.

Thorax.—On removing the sternum, an enormous mass of disease was presented, fully the size of a man's head, and consisting of the bronchial glands enlarged and hardened almost to the consistency of scirrhus. This mass surrounded and embraced the trachea and bronchi from the larynx to the roots of the lungs. The right pleural cavity contained not less than five pints of serum, and the left three pints. The right pleura was covered with a beautiful lacework of soft lymph. The lung was completely collapsed and in one part carnified. The left lung was much contracted, but still permeable to air. The diaphragm was pressed downwards and the heart displaced almost into the epigastric region. The pericardium contained a small amount of effusion. The heart was contracted and flabby. The mitral valve slightly thickened on one border.

Abdomen.—The liver was healthy and of the normal size, but displaced so as to extend completely across the abdomen, and pushed down nearly to the umbilicus. The kidneys much congested; the spleen and all other organs which were examined appeared healthy.

In view of the great changes in the thoracic cavity in this case, it is not surprising that this patient should have been suffocated, but rather that he should have lived so long, with a breathing apparatus so much impeded. The right lung must have been useless for some time, and the left lung greatly diminished in its powers of expansion. Auscultation led us to somewhat misappreciate the condition of the right side of the chest, for hearing loud, roaring, bronchial rales, we did not suspect the immense amount of effusion which existed. The autopsy showed that these rales were conveyed to the ear, not by condensed lung tissue, but by the enlarged mass of bronchial glands.

The condition of the skin over the enlarged cervical glands, and in other parts of the body, presented an appearance not remote from that described by systematic writers as constituting the elephantiasis of the Arabs.

It should be mentioned that at the autopsy, in two of the detached glands, suppuration was found to have taken place.

When cancer attacks the lymphatic glands it is almost always of the medullary variety: simple hypertrophy, however, as in this case, whether following chronic inflammation or from other causes, is frequently attended with such induration as to present very much the appearance of scirrhus.

It is needless to say that no operation would have been justifiable in this case, even had the disease been confined to the glands of the neck; for such were the relations of the cervical tumour with the great vessels and nerves of that region that a death on the table would have been the almost inevitable result of an attempt at extirpation.

A microscopic examination of the tumours revealed a mass of granules, but no distinct cells.

Inguinal Hernia.—DR. PACKARD exhibited a portion of intestine removed by him from a strangulated hernia, which had proved fatal in a child æt. 8½ months, the subject of exstrophy of the bladder and epispadias. The case occurred in the practice of Dr. Lamb, of Frankford, and the post-mortem examination was made by Dr. Packard.

The hernia which caused death was an indirect inguinal one, of the right side. Both groins were the seat of herniæ, but the sac on the left side was empty when examined. The herniæ had first appeared two or three months after birth. On laying open the sac on the right side, a loop of intestine, consisting of several inches of the lower part of the ileum, was found engaged, and deeply congested; the tip of the vermiform appendix was also caught at the neck of the sac, and constricted. The inguinal canal was shortened and greatly widened—so as to resemble that in direct hernia. No abundant reddish serum was contained in the sac.

The testicle, the hernia vaginalis of which was perfect, and the seat of a small hydrocele, seemed healthy.

The bladder, the mucous membrane of which was quite deeply coloured and rugose, could be pushed into the abdominal cavity, but was immediately extruded again. On dissecting away the skin, the recti muscles were found to diverge downwards from the umbilicus, so as to leave a space of about two inches between their insertions. The bodies and rami of the two pubic bones seemed to be wholly wanting; the thyroid foramina communicating with the interspace between the bony walls anteriorly. The penis, although in a state of complete epispadias, was well formed, showing the glands, fossa navicularis, prostate, seminal duct, verumontanum, &c.

The mucous membrane of the bladder, bulging forwards, was in contact by its lower portion with the floor of the urethra. A probe, passed into either ureter, showed the tube running its normal course to the kidney.

There was no evidence of any other abnormity about the body.

April 27. *Abscess of the Brain.*—DR. JOHN ASHHURST exhibited the specimen, and read the following history of the case from which it was derived:—

J. A. W., aged seven years, was brought to the Dispensary of the Episcopal Hospital on the 25th of March, 1864, and was admitted to the surgical ward to have an operation performed for ectropion. The upper lid of the right eye was the one affected. The child had been treated at the dispensary three months previously for enlarged cervical glands and an abscess of the right thigh. There was nothing either in the appearance of the child or in its history to cause uneasiness, and I anticipated removing the ectropion on the following day. I found, however, when making my visit the next morning, that the child had been sick at the stomach, and complained of much headache, on which account I concluded to postpone the operation. At my visit on the 28th I learned that the child had had, the day previous, two convulsions, which, however, had been easily relieved by immersion in a warm bath. I now observed that his pupils were much dilated, and that there was a cyanotic appearance, showing great sluggishness of the capillary circulation. To act gently on the liver, and remove the apparent gastric and intestinal irritation, I now gave him very minute doses of blue mass and of Dover's powder. The next day he complained greatly of headache, and was rather soporose. He had another convulsion in the afternoon, described by Dr. Middleton, the resident surgeon, as tetanoid in character, both trismus and opisthotonos being present. He died rather suddenly at 5 P. M.

An autopsy was made twenty hours after death with the following results:—

Rigor mortis but slight; *head* only examined. The cranium was large, and with prominent frontal and parietal protuberances. The fontanelles were closed; skullcap of normal thickness. When the calvaria was removed, the brain appeared to start out, as though it had been compressed; the skullcap, however, could be replaced without difficulty. The membranes were somewhat congested, and the brain gave the sensation of extreme elasticity; feeling like an India-rubber ball, or a bladder filled with liquid.

In removing the brain the third ventricle was accidentally opened, and immediately there was a gush of greenish bloody pus. A large abscess was found in the lower part of the middle lobe of the right side of the cerebrum, extending into the right lateral ventricle. This abscess had at one point approached within half an inch of the surface of the brain. Fully six fluidounces of pus escaped from or were found in the abscess. The brain substance itself appeared healthy. Death evidently resulted from the abscess bursting into the ventricle, and thus pressing upon the medulla oblongata.

This abscess was of the form described by Prof. Gross as the "undefined abscess," its walls being formed by the brain substance, and its lining "rough, granulated, and shaggy." I regret that no sufficient history of this patient could be obtained to give any probable account of the origin of the disease.

Abscesses of long standing are generally of the encysted variety. Sir Everard Home, Copland, and others, have narrated cases where the injury preceded the fatal result by months and years. Forbes Winslow records a case where death was delayed until ten years after the accident which was its cause; and the patient experienced no particular inconvenience in the meanwhile. It is even probable that in some cases of cystic abscess the pus is absorbed, and the walls of the cyst contract into the cerebral cicatrices sometimes found after death.

Cerebral abscesses sometimes make their way outwards, instead of into the ventricles, and it is not impossible that in this way a spontaneous cure might be sometimes effected. Prof. Gross describes a case where the cribriform plate of the ethmoid bone was partially destroyed by an undefined abscess.

A practical question of interest is as to the possible propriety of trephining in cases of cerebral abscess. My own opinion is decidedly against the operation for the following reasons. In the first place, the diagnosis of cerebral abscess is exceedingly obscure, being, indeed, never certain till proved by post-mortem inspection; secondly, even if the diagnosis could be made with sufficient certainty, and definiteness as to locality, in a large number of cases no relief could be afforded by trephining; for the pus of these abscesses is often so thick that it could not be evacuated even by a free opening. Thirdly, the probability of the abscess opening into a ventricle (an occurrence which I believe proves uniformly fatal) is not appreciably diminished by the operation, while the possibility of absorption and obliteration of the cavity would be absolutely prevented by the introduction of air.

What, then, should be the treatment of abscess of the brain? I confess that the prospects of any course are very unfavourable. The best hope we can have, is that our diagnosis may be erroneous; and with that view we should resort to the remedies for central or reflected nervous irritation, as the symptoms may seem to indicate.

Compound Fracture of Humerus, Ruptured Spleen, etc.—Dr. JOHN ASHHURST read the following case, for the notes of which, and for permission to report the same to the Society, he stated himself greatly indebted to his colleague, Dr. Robert N. Downs, of the Cuyler Hospital, Germantown, in whose ward the patient was treated:—

Charles D.——, Sergeant Co. "C," 69th Pennsylvania Vols., 38 years of age, entered the Cuyler Hospital, April 18th, 1864. He had re-enlisted, and, his furlough having expired, was on his way to join his regiment at Chester Barracks. He received his injuries by falling or jumping from the train while in motion, two days before he was received into this hospital. He had been very drunk when the accident occurred. When seen by Dr. Downs he was found to have sustained a compound fracture of the right humerus, a short distance below the surgical neck; the external wound being very small, and apparently produced by a squeezing force from without rather than by the fragments of the broken bone.

There was also a severe contusion of the left temple with marked ecchymosis, both orbital and palpebral. The constitutional symptoms were those of threatened delirium tremens. The arm was placed at rest on an appropriate splint, and an anodyne, stimulant, and tonic mixture directed to be given at stated intervals. For the first twenty-four hours everything went well, but during the second day in hospital, the fourth since the accident, vomiting came on, and continued, more or less, in spite of treatment until the final issue. On the morning of the fifth day, the patient was evidently moribund: pulseless at the wrist, bathed in a cold sweat, and entirely delirious; incessantly moving hands and feet, the broken ends of the humerus could be felt rubbing together in his jactitation, while a general capillary congestion almost amounting to cyanosis showed the embarrassment of the vascular system. Another symptom was now prominent, to wit, excessive dilatation of both pupils. Coma gradually came on, and death ensued about 3 P. M. of the same day.

An *autopsy* was made nineteen hours after death with the following results.

Rigor mortis well marked; the cadaver muscular and well nourished. In the *cranium*, considerable congestion (venous) both meningeal and interstitial; not much ventricular effusion. The brain being unfortunately torn in its removal, it could not be ascertained whether there was any laceration or disorganization due to the injury. From the dilated pupils and orbital ecchymosis, however, it is most probable that such a condition did exist. The *thorax*, when opened, showed the right lung somewhat congested posteriorly, the left being healthy; the heart and pericardium free from disease. Both ventricles of the former contained very large and firm fibrinous clots, fringed with others, smaller, and of the "currant jelly" variety.

In the *abdomen* there was marked hemorrhagic effusion, partly liquid but mostly consisting of coagula, which had settled towards the bottom of the pelvis. Blood was also poured out between the layers of the omentum. The liver was rather large, but healthy; kidneys, bladder, and alimentary canal, also healthy; the spleen appeared softened, and somewhat lacerated at its parietal extremity.

Dissection of the arm showed a multiple fracture of the humerus, a large triangular fragment completely separating the upper and lower portions of the bone.

There are several points of interest in the foregoing case which merit a brief allusion. Orbital ecchymosis has been generally supposed pathognomonic of fracture at the base of the skull, but cases referred to in *Holmes' System of Surgery*, and one reported by myself to this Society, have shown that it is not a sign to be implicitly trusted. The force, however, which could rupture a vessel within the orbit, must seriously endanger the integrity of the brain; and that there was cerebral irritation in this case was also probable from the state of the pupils. Here, then, were indications for low diet, and large doses of opium; but on the other hand the threatening and afterwards existing delirium and prostration, and the capillary congestion and impending coma, would seem rather to call for free stimulation and the avoidance of narcotics. In such a case the golden rule of Dr. Watson's is the one to be followed: "To obviate the tendency to death." We must watch our patients, and blow hot or cold, alternately or simultaneously, as the emergency may seem to require.

Another remarkable feature in this case was the existence of the serious abdominal lesion, without evidence of its presence during life. Injuries of the spleen generally prove almost immediately fatal, and yet here life was prolonged for four days and nights, with nothing to direct attention to this severe visceral complication. Mr. Pollock, in his excellent monograph in *Holmes' System of Surgery*, states that the dangers of ruptured peritoneum,[1] are, at first, hemorrhage, and afterwards peritonitis, yet here there was nothing to indicate loss of blood in any amount greater than accounted for by the external injury, and the autopsy showed no approach to inflammation or even to active congestion. This man died of *mania à potu*; had he escaped that complication, it is just within the bounds of possibility that he might have survived his injuries, the clots in the abdomen have become encysted or absorbed, and the spleen have presented to some future pathologist a curious and unaccountable cicatrix.

Sept. 14. Synopsis of Autopsies made at Lincoln General Hospital.—Dr. H. WOOD, Jr., presented the following paper for Asst. Surg. H. ALLEN, U. S. A.:—

The following synopsis of autopsies was drawn up from a series of observations instituted at Lincoln General Hospital, Washington, D. C., during the year 1863 and part of 1864: 223 autopsies were made during this time, the results of which were carefully recorded.

Of this number 102 were medical cases, the remainder surgical. It is the former class alone which I have here consolidated. It is justice to state that 49 of the 102 autopsies were made by Asst. Surgeon G. M. McGill, U. S. A.; the remainder were made under my own auspices.

I have purposely avoided making any general remarks upon the conditions described in this paper, since I intend it to be a statistical synopsis rather than a monograph on pathology of army disease. But, in this connection, it may be allowable to state that the ulcers noticed in the fauces and larynx of certain cases of pneumonia and typho-malarial fever were, in my opinion, of a scorbutic nature, and that, although the condition of the spleen of chronic diarrhœa, as described in that section of the paper, is opposed to the conclusions of other observers, yet I am entirely satisfied that as far as these specimens go, my conclusions are correct.

No mention of the kidneys or supra-renal capsules has been made. Little or no differences were observed in these organs in the many examinations made of them. The kidney was frequently bloodless—occasionally very slightly fatty; the supra-renal capsules[2] was occasionally friable, with nodulated borders; but the abnormal changes were in both organs so unimportant, that it was not deemed necessary to tabulate them.

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[1] In a case of ruptured peritoneum without other visceral injury, which I reported to the Society about two years ago, death ensued in less than eighteen hours after the accident.

[2] Dr. Levick ("Miasmatic Typhoid Fever," *Amer. Journ. Med. Sci.*, xciv. 410, April, 1864) states that Prof. Leidy has found discoloration of these bodies in one-fourth the cases of typho-malarial fever. I have not been successful in noticing the prevalency of such "discoloration."

A copy of this synopsis is on file in the Surgeon-General's office. All interesting specimens mentioned are preserved in the Army Medical Museum.

Chronic Diarrhœa.—The following is a *résumé* of 41 cases:—

Emaciation was extreme in all. The cornea was ulcerated in 4 cases only. The bodies were frequently offensive; a concentrated odour arising from the skin. In 6 subjects a peculiar condition of the capillaries of the skin was observed. This consisted apparently of the transudation of the colouring matter of the blood into the connective tissue about the vessels. It differed from the dull red colour generally found upon subjects a few hours after death in being intenser in colour, in having its boundaries well marked, and in not being confined to the most dependent parts of the body.

Lungs.—20 were affected with *pneumonia*, of which number 8 cases were double, 12 single. Of the latter number 9 were on the right side, 3 on the left, 7 were *congested*. In 6 this condition was extreme on both sides. In 7 cases *phthisis* was discovered, in 5 of which the deposit existed in both lungs. In the other 2 it was found on the right side alone. In 1 of the last-mentioned cases, *pneumonia* existed in the corresponding lung. In the remaining 7 cases the lungs were not diseased. The aspect of the parenchyma, however, was unusual. The lungs were shrunken, and occupied but a small portion of the thoracic cavity. In some, the distance between the anterior thoracic wall and the lung was as great as 2½ inches. The parenchyma was dry, with little bronchial secretion evident, and no appearance of the delicate pink hue of the healthy lung. Owing to the absence of blood, and to the presence of pigmentary matter, the tissue was everywhere of a grayish colour.

The *heart* was diseased in 3 cases only; in these the organ was flabby, approaching the condition often observed in typhoid fever. The muscular fibre was paler than in health. Clots were found in the ventricles in all cases excepting 5. In 8 instances complicated with *pneumonia*, the clots were unusually large, firm, and white. The quantity of pericardial fluid measured from 1 to 8 drachms. In one case *pericarditis* was observed.

The *liver* presented but little variety in size or colour. The texture was somewhat more friable than in health, with the outlines of the acini better marked. The parenchyma was of a dark colour, and verged, in some subjects, to the intensity of hue seen in the bronzed liver of *remittent fever*. On the other hand, occasional specimens were met with in which the texture was softer than natural. The interior of the organ in these cases presenting a uniform dull red colour, with indistinct acini. In the latter class of specimens the hepatic cells were generally observed to be granular, and in many instances to be undoubtedly fatty. Apart from these, were noticed cases of fatty degeneration—8 in number, in which the parenchyma was of a yellow colour more or less indistinct, with the cut section giving the usual nutmeg appearance. It will thus be seen that the liver in patients affected with chronic diarrhœa possesses a tendency to fatty degenerations.

The presence of fatty matter frequently gives a yellowish appearance to the organ, but even in the absence of this, when the indistinct appearance of the acini coexists with a flabby condition of the tissue, the presence of an increased amount of oil in the cells may be reasonably expected.

The *spleen* had an average size of 5 inches in length by 3 in width. The largest specimen measured 11 × 6½; the smallest 3 × 1½. The great majority were rather small, firm, and compact; but 6 out of the whole number could be called actually soft. The general colour was dark purple externally, with a brownish-red admixture internally. From this colour of the parenchyma, the organ was called, in the note taken at the time of the examination, "the mahogany-coloured spleen."

Pancreas was healthy; in 5 cases was unusually firm and white.

The *intestines* were found to be the chief seat of disease. The whole alimentary canal was affected, though the greater lesion was invariably found in the colon. The ileum in a small minority of cases was markedly diseased. The mucous membrane, however, showing evidences of an unhealthy condition in all.

Those cases which offered the greater amount of change in the small intestine always presented immense ulcerative lesion of the colon. In fact the first anatomical change occurs in the large intestine, all others being subordinate to them. *Ileum.*—The mucous membrane was generally of a dingy slate colour, modified in places by the presence of biliary matter. Patches of hyperæmia were scattered here and there along the tract, being most abundant toward the ileo-cæcal valve. The mucous membrane was softened and thickened. The mucous folds were in the larger number of cases obliterated, giving the intestine an "ironed-out" appearance. This condition appeared to be due to the atonic state of the muscular coat, allowing the flatus to distend the calibre of the canal. In other specimens the irritable condition of the muscular coat had produced excessive contraction, making the mucous folds high, tortuous, and closely approximated. The villi were conspicuous in all cases. They were generally brought out in strong relief to the grayish, leaden colour of the mucous membrane. In 4 cases they were matted together by a low form of exudation. This product was of a dull, greenish colour, and extended from the ileo-cæcal valve some distance up the intestine. In 3 of the cases above named, the presence of the same kind of exudation was found in the colon. In one intestine it was found in the ileum alone. The solitary glands were often enlarged. Ulcerations of a simple rounded form were present in 2 cases. Peyer's-patches were generally inconspicuous, not elevated, of a dull white colour, and frequently a leaden hue from the deposit of pigmentary matter. In 5 cases they were greatly enlarged, but in one case only were they ulcerated. In this instance the gland containing it was turgid, the base of the irregular ulcer was whitish, and lined with exudative matter. In 1 case ulceration of the cæcum occurred involving the walls of the small intestine, a lesion entirely distinct from any pathological condition of the gland.[1]

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[1] *Extract from P. M., No.* 178.—"The region immediately about the ileo-cœcal valve was rich in interest. A large perforation existed through the coats of the small intestines at its junction with the colon. It was situated at the side of the canal midway between Peyer's patches and the mesentery. It was evident from its position that it was the result of a previous change which had taken place in the cæcum. Upon examining this latter locality, it was discovered that a second perforation had occurred in the caput coli, about the size of a five cent piece. Both ulcers opened into a common cavity, defined on its inner side by the intestinal walls, on the outer by the iliac muscle, and above by a fold of the omentum. The iliac muscle was considerably disorganized, and contained one drachm of offensive pus. The portion of omentum which covered the cavity was thickened, and on its under surface lined in common with the intestinal and iliac surfaces, with a ragged, blackish membrane. No peritonitis was present. The omentum, adherent as it was to the purulent spot, had prevented any communication with the abdominal cavity. The colon presented the ordinary lesion of chronic diarrhœa."

Colon.—The mucous membrane was of a dull gray colour, generally more vascular at the cæcum than elsewhere. The ulceration, which commenced in all cases in the follicles of the tract, was of two kinds, simple and confluent. The simpler form presented small punctate, superficial ulcers distributed over the membrane. These were most prevalent at the lower part of the canal. The cæcum was less frequently the seat of such ulcerations than other localities. The longitudinal bands were favourite sites for this destructive change; several instances were met with in which these bands were sprinkled with scooped-out ulcers, when no similar changes had taken place elsewhere. The confluent form arose from the union of the simple ulcers, and was always accompanied with thickening of the mucous membrane. In advanced conditions, partial destruction of the membrane was found, and in those uncomplicated forms accompanied with extreme emaciation, which had pursued their unchecked course until the lesion had become the exciting cause of death, almost entire destruction of the mucous membrane had taken place. The colon here presented one mass of disease. All resemblance to the original structure had disappeared. By the elevation of the thickened membrane between the ulcerated areas a very irregular surface was obtained; when the ulcers were small, rounded, and close together, a honeycombed appearance was the result; when irregular and confluent, a ragged, illy-defined mass. The colour of the ulcers was for the most part a darkish slate gray, occasionally of a turgid purple in those portions undergoing repair. Where extreme induration had taken place, the ulcers and their surroundings were of a light yellowish "tallow" hue. Livid patches of inflammation at times were seen which brought out in strong contrast the contiguous sombre colouring. The cæcum when the disease was far advanced was in some instances in danger of perforation. One case was observed where the walls were greatly thickened and softened, the calibre much contracted and the peritoneum inflamed; no perforation had, however, taken place. In two other specimens this lesion had actually occurred. In 12 cases a greenish yellow exudation of a diphtheritic nature covered the ulcerated patches, and was similar to that mentioned as occurring in the ileum. Peritonitis was found marked in 3 cases. The inflammation in 2 of these was of a low type, and corresponded in position with the portion of the tract most diseased. In the first it was found in the form of adhesive inflammation about the sigmoid flexure. No pus was found elsewhere. In the other healthy pus was found bathing the cavity of the peritoneum in small quantity. No vascularity of the peritoneum was detected. The third case demonstrated the presence of extensive recent peritonitis.

Typho-malarial Fever.—The following is a *résumé* of 35 cases:—

Larynx and Trachea.—The epiglottis was generally of a delicate whitish-yellow colour, which merged into a paler hue on the sides of the thyroid cartilage. Here the membrane had not unfrequently a bluish tinge, with the superficial veins occasionally prominent. The trachea was universally of a pale red colour between the rings, white upon them. The surface of the lining membrane was often covered with papules of mucus, the result of overaction of the follicles; where this condition of the membrane was noticed, a complication of the lung was generally coexistent. In one case ulceration was established. In this specimen the posterior surface of the epiglottis was covered with a diphtheritic exudation in common with that of the fauces. The epiglottis was much thickened and ulcerated on the free margin of either side. On the left side the single ulcer was 7 inches long and 2 wide, of an elliptical shape; its walls high and rounded. The right side was the seat of two distinct ulcers, similar in character to that of the opposite side, arranged in a line one above the other: the one near the tip measured 3‴ × 2‴, the lower 4‴ × 2‴. On the left side of larynx, immediately below the chordæ vocales, an irregular superficial ulcer, with low whitish walls, was seen, which measured 6‴ in length. A second similar ulcer was found in the angle formed by the junction of the thyroid cartilage; it was smaller than the other, measuring but 5‴ × 1‴. The mucous membrane gave evidence of deep inflammation. That covering the epiglottis was of a yellowish cast; the chordæ vocales of either side were of a light blue colour, while the surface of the larynx below this point was of a dark slate yellow, the membrane being thickened, and accompanied with injected superficial vessels. In another case the epiglottis was stiff and the mucous membrane thickened, though no ulceration was detected. The sub-epiglottidean follicles were enlarged and softened. The left side of the organ was more affected than the right. The mucous membrane at this point was of a greenish-brown colour, paler beneath. Trachitis was detected in one case only. It was very decided, however, though unaccompanied with either laryngitis or pneumonia. The œsophagus and pharynx were healthy in 27 instances. The mucous membrane was generally of a dark purplish tinge down to the inferior border of the larynx; beyond this point the membrane was of a lighter hue; at the lower third a yellowish ochre was seen. In some specimens this appearance extended two-thirds the length of the gullet; in others the entire tract was stained.[1] 5 cases of ulceration were observed. In 2 of these it was confined to the cardiac extremity, where it was quite superficial, and arranged linearly in the longitudinal axis of the tract. The ulcers were, therefore, longer than wide, with an average size of 1½″ × 2‴. In another instance the lesion was detected in the upper portion of the canal, and extended from the region of the epiglottis 4″ downwards. The ulcers were of a punctated form, 5 in number. Several of them were covered with a greenish exudation; most were superficial; 2, however, were cut through to the mucous coat of the pharynx. The surrounding mucous membrane, both above and below the locality, was greatly inflamed, and in their immediate vicinity it had a decidedly gangrenous odour. In four or five instances small but conspicuous ulcers were detected in the posterior wall of the pharynx, at the point of its emerging into the œsophagus. In addition to these, 3 specimens were found in which decided inflammation was present, without ulceration. In the first of these the lower portion of the œsophagus was of a dark purplish colour, with numerous spots of ecchymosis, of the size of mustard seeds, visible in the submucous connective tissue. The upper portion of the gullet and the whole of the pharynx were of a dark greenish appearance, somewhat resembling the colour of an old intestinal ulcer. The mucous folds were very soft, and the whole canal much thickened and disorganized. Opposite the sixth cervical vertebra it was firmly adherent to the bone. In the second case a lower form of inflammation was observed, confined to the laryngeal region, and accompanied with a diphtheritic exudation upon the mucous membrane. No thickening of the tissues was observed. In the third specimen an abscess was detected in the posterior wall of the œsophagus, where the organ is crossed by the right bronchus. It had attained the size of a hazelnut, and contained healthy pus.

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[1] Of these discolorations one was congested; one stained yellowish ochre near cardiac extremity; one pale blue above, marbled ochre below; one bright ochre colour.

Lungs.—The cases of congestion were 15 in number. This condition embraced every variety of engorgement, from simple excess of blood to a turgidity of the parenchyma, absence of crepitation, and the presence of an excessive amount of sero-sanguineous fluid. All the specimens, upon being cut open, poured forth a thin fluid, which, from the admixture of blood and bronchial secretion, assumed from the one a dark reddish and from the other a frothy appearance. The condition of the lung indicated by these characters was distinguishable from splenization. By the employment of pressure in the one the contained fluid would pour out and the section collapse, while the same force applied to splenified lung would result in its breakage. Both sero-sanguineous congestion and splenization were frequently detected coexistent in the same specimen, the latter doubtlessly being a sequence of the former. 10 cases of pneumonia were observed. Of these 3 were double, 7 single. Of the latter, 2 were found upon the *right*, and 5 on the *left* side. All were in the second stage of the disease. In addition occurred 1 case of *capillary bronchitis*, and 1 of *phthisis*. In the latter the tubercle was deposited in the apices alone. In the remaining 8 cases the lungs were not diseased. 3 cases of pleurisy came under our notice. 2 were simple; the other, a case of pleuro-pneumonia, was very slight, the pleuritic complication being confined to the external surface of a patch of splenified lung. The uninflamed lungs in every case of typho-malarial fever presented a peculiar appearance. The dull red colour of the parenchyma contrasted with the pigmentary matter, frequently deposited in increased amount, gave the tissue a mottled aspect, which was quite characteristic.

Heart.—29 specimens were firm; 6 were soft. The number of flabby hearts appear to have been smaller than would have been expected. The organ was generally pale, and the presence of clots noted in all the specimens but three. Those having the large clots were invariably accompanied with some pneumonic complication. In two cases the cavity of the pericardium was obliterated by previous inflammation. The quantity of pericardial fluid was generally large. It varied from ʒi—℥iij.

Liver.—Of the 35 organs examined, 24 were firm; 11 were flabby. But 3 specimens gave decided evidence of fatty degeneration, though this change had no doubt taken place in most of those that were flabby. No specimens of the nutmeg liver were met with. 4 were much congested; 2 were bronzed; 1 had capsule of Glisson much indurated. The bile was generally large in quantity, varying from ʒij—ʒxx. It was frequently black, thick, and tar-like; at other times dark greenish-brown or ochre; at others of a more yellowish tinge. Frequently viscid, it was occasionally thin, with a light flocculent deposit.

Spleen.—Of this organ 21 were found firm and healthy; 14 were flabby or pultaceous. The organ was generally of a grayish-purple colour externally, with a dark purplish-brown or an intense bluish-gray internally. The trabeculæ were generally conspicuous. The diseased specimens presented every form of softening, from slight flabbiness to pultaceous disorganization. When in this last mentioned condition the spleen was so soft as to break readily upon being removed from the body, and when grasped firmly in the hand the pulp would flow out in a thick continuous stream, like water from a sponge. The average length was 5″ × 4″.

Intestines.—In all the cases the intestines were extensively diseased. In 28 cases the pathological appearances were confined to the ileum; in 7 the colon was involved.

Ileum.—The mucous membrane was of various shades of yellow and white colour, being of a lighter hue in the jejunum, where the colour was doubtlessly intensified by the presence of biliary matter, and gradually becoming darker as the region of the ileo-cæcal valve was attained. The mucous membrane was in all cases more or less softened, and the mucous folds generally obliterated in the lower third of ileum. This was particularly the case in specimens taken from patients who had lingered a long time. The parts immediately around the ileo-cæcal valve were uniformly the seat of greater pathological changes than elsewhere. From this point the glandular evidence of disease extended several feet up the canal; in one instance reaching the distance of 10 feet above the ileo-cæcal valve. No ulcers were detected above the jejunum. The greater lesions were invariably observed in the closed glands. These in the earlier stages were tumid, thickened, of a whitish colour, with high abrupt walls. Of the whole number of specimens, 18 presented ulceration in patches intumescent; 14 in patches not intumescent. In 3 the condition of the patches was unnoticed. The character of the ulcer varied as it existed either in a swollen or shrunken gland. If in the former, its walls were high, its base red, its form generally circular or sub-oval, and occasionally a low form of exudation appeared upon its surface. This form was never confluent, and in no instance was the entire surface of a patch the seat of ulcerative change. Several distinct ulcers, however, were seen in one patch, and in 3 instances the whole area was pitted with punctate ulcers, giving the gland a honeycombed appearance. This condition of the agminated glands was always accompanied with a similar change in the solitary follicles. The enlarged follicles were frequently so numerous as to give the surface of the gut a mammillated appearance. In the shrunken gland the ulcers were always of a duller hue, the walls seldom high, and if so, were confined to the periphery of the affected patch, forming a rounded sub-everted border, the area within which constituted the ulcer. The base was chiefly of a dark blackish colour, due to the presence of pigment. The form of the ulcer was, as a rule, irregular, a condition due to the unequal ravages of the undermining process which had taken place at the base of the individual follicles. In 8 cases the borders of the patches were scooped out to the depth of a line by this action. In 2 cases perforation of the walls of the intestine had taken place. Both lesions occurred in ulcers in the neighbourhood of the ileo-cæcal valve; in both peritonitis was extensive.

Colon.—The colon was complicated in 7 cases. 2 cases of simple congestion near cæcum without follicular enlargement, 4 cases of congestion with follicular enlargement, in 3 of which ulceration had occurred. In the 7th case inflammation was present, the mucous membrane being thickened and indurated near the cæcum, simple follicular ulceration had taken place.

One case of death had been occasioned by imprudence in diet. The exciting cause of death having been hemorrhage. Large quantities of the seeds of the blackberry were found in the acutely inflamed tissues of the alimentary canal. One case of gluteal abscess was observed. It had discharged its contents previous to death.[1]

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[1] Extract from P. M., No. 182.—"The right buttock was the seat of a gluteal abscess. Its position was immediately to the outer side of the anus, and extended

The parotid glands were inflamed in 6 cases; suppuration was noticed in 2. Inflammation of the thyroid gland with thyroid apoplexy was observed in one case; in the same subject enormous abscesses were observed in the salivary glands. In one instance an abscess was detected in the cellular tissue beneath the diaphragm at the epigastrium. It contained a drachm of healthy pus.

Pneumonia.—Of this disease 21 cases were observed.

The *larynx* and *pharynx* were involved in 2 cases. The first of these had the epiglottis highly injected, especially at its free edge. The chordæ vocales were ulcerated on both sides at their posterior portion. The ulcers were lined with high roundish pale walls. The mucous membrane around them was of a dark purplish colour, that upon the sides of the larynx lower down was injected and of a stone blue. In the second specimen the ravages had been more extensive. The pharynx was in a state of chronic inflammation; the walls were much thickened, the constrictor muscles very pale; the mucous membrane of a dim yellowish gray colour more marked immediately about the orifice and upon the sides of the glottis. Epiglottis thickened, slightly injected on its free anterior border. Mucous membrane lining the larynx of the same colour as that of the pharynx, having a stone blue cast opposite the cricoid cartilage. The left side of the rima glottidis was thickened, tumid, and covered by a whitish yellow exudation. This exudation concealed the dimensions of an ulcer, the edges of which were ragged, irregular, and sinuous. The base of the epiglottis of the corresponding side was also the seat of ulceration; the ulcer having free everted borders, and being filled with a tenacious pus-like exudation. Upon the opposite side of the organ a small ulcer about the size of a buckshot was observed.

Lungs.—16 presented pneumonia upon both sides; 5 on one side alone, 3 on the right, and 2 on the left side. But two specimens out of this number presented complications with pleurisy. Of these one was on the right, the other on the opposite side. Nothing peculiar was observed in the appearance of the consolidated portions of the lung substance. The most common form the inflammation assumed was that of splenization. Red or gray hepatization were comparatively rare. In some specimens all three conditions could be demonstrated, gliding into one another.

The *heart* was healthy in all but one instance, in which hypertrophy was present. In a majority of cases the right side of the organ was distended with a large soft fibrinous clot. The quantity of fluid in the pericardium varied from dr. 1 to oz. xvi.

Liver.—13 were healthy; 5 flabby; 4 had a tendency to become fatty; 1 was markedly nutmeg. In 2 cases congestion was present.

Spleen.—12 were healthy; 13 soft; of which the majority were pultaceous.

Pancreas was healthy in all instances.

Intestines.—14 specimens were healthy. In 8 instances the solitary glands in the lower third of ileum were enlarged; in 1 case of which simple ulceration had ensued. In 2 cases the colon was complicated. 1 specimen presenting minute punctate ulcers in the cæcum; the other was

deeply into the surrounding parts. The external opening was small, the cavity within large. Immediately previous to death a severe hemorrhage had occurred at this spot. Several large firm blackish clots were found in the cavity, which were very offensive. No flatus or excrement, however, appears to have escaped."

without ulceration, though the folds of mucous membrane throughout the tract were covered with a form of diphtheritic exudation.

Diphtheria.—But 5 cases were observed of this disease.

The exudation was confined in 2 cases to the pharynx and larynx. In the other 3 it extended to the trachea. In 2 the entire area of the respiratory passages were filled with it. In no case was any ulceration of the mucous membrane observed.

Lungs.—3 were affected with pneumonia; one partially carnified: the other was healthy. In no specimen was the pneumonia sufficiently extensive to have been the cause of death.

The *spleen* in 3 cases was soft in the extreme; firm in 1, condition not noted in 1.

The *intestines* were healthy in all cases. In 2, slight enlargement of the solitary glands of the lower third of ileum and head of colon was observed. In 1, the mucous membrane of the latter was of a grayish slate colour. In no specimen did any ulceration or exudation exist.

The other organs were found in a healthy condition.

In addition to the above, autopsies were made upon 16 cases of phthisis—1 case of pericarditis, 1 of aneurism of thoracic aorta (death occasioned by the bursting of the aneurism into the pericardial cavity), 1 case of purpura, 1 of capillary bronchitis, carcinoma of testes, hydrothorax, and typhoid pharyngitis.

Purpura Hemorrhagica.—Dr. H. C. WOOD, Jr., read for Asst. Surg. Harrison Allen, U. S. A., the following history of the case.

Oscar Rowdebush, private Company E., 111th Pennsylvania Volunteers, 22 years of age, bilious temperament, was an attendant in ward 20, Lincoln Hospital, March, 1863. He had entered the hospital some months before with aphonia. On the morning of the 27th inst. the patient complained of a coryza with pain in the head and slight cough. The following morning he was seized with a paroxysm of intense pain in the small of the back. The skin was now suffused with a dark red blush; and innumerable purplish petechiæ, not removable under pressure, and averaging in size that of a grain of mustard seed, appeared simultaneously over the whole body, although most prominent over the abdomen and chest. The sclerotic conjunctivæ of both eyes became swollen and assumed a deep black colour, while that portion lining the palpebral surfaces remained of a delicate pinkish hue. The cornea was of glassy clearness, and owing to the swollen condition of the conjunctivæ apparently depressed. The pupils were contracted.

In the afternoon of the same day the patient coughed up a quantity of bloody sputa; soon afterwards a slight hemorrhage from the fauces occurred, while bloody urine was voided from the bladder.

On the evening of the 28th the tongue became dry and hot, lips tumid, parched, cracked, and of an intense black colour. The roof of the mouth covered with a whitish covering, which was probably altered epithelium. Respirations 30 a minute, somewhat laboured; no cough. Upon a physical exploration of thorax nothing abnormal was detected. Pulse at wrist 120, heart's impulse rather small; rhythm regular, temperature of surface between thighs 110°. *Power of speech returned at this time.* Muscular power everywhere perfect. Mind clear, patient conversing rationally. During the night he became delirious, talked to himself, and endeavoured to get out of bed. On the afternoon of the 29th inst. he grew worse, pulse rose to 132 per minute—was small and jerking. Respirations 32 per minute, stertorous; patient lay upon the left side with the protuberant portion of conjunctivæ conspicuous between the partially closed lids. He soon afterwards became comatose, and died at 8 o'clock on the morning of the 29th inst.

The *autopsy* was performed four hours after death. The body was well developed, the *rigor mortis* marked. The purpuric spots were about equally distributed upon the trunk and extremities; the fingers and toes were full, the face comparatively free.

Upon examining the internal organs the cellular tissue throughout was found to be the seat of innumerable extravasations of blood, which were in their intensity in *inverse* ratio to the density of the tissue. In those localities where it was dense, such as the pericardium and the palpebral conjunctivæ, the size and number of the patches were small. But in situations where the tissue was not so compact, as around the kidneys and in front of œsophagus, the transudation was enormous. Numerous bright reddish spots were discovered in the lungs, especially at the apices, and both organs were engorged with venous blood. The mucous membrane of the respiratory passages was completely filled with innumerable, blackish purple spots. The pericardium was free except at its base, where two distinct patches of ecchymosis were present, each 2½ inches in length. The endocardium of right ventricle and lining membrane of pulmonary artery was filled with them. The intestinal submucous and sub-peritoneal connective tissue, especially at the lower third of ileum and the whole of colon, were the seat of similar changes, as were also the pelves of kidneys and lining membranes of ureters and bladder. It is singular that *the brain and meninges should have been entirely free from the changes elsewhere noticed.* All the organs were perfectly healthy. The spleen measured 5½ by 5 inches, weighed 14½ ounces. It was of a reddish purple colour, quite firm.

The blood was not examined microscopically, since no instrument was available at the time.

Remarks.—This was in many respects a curious case. A soldier affected with aphonia, and in general good health, is suddenly attacked with coryza followed by high fever and intense pain in the back; and within 48 hours from first symptom of indisposition a rapid transudation of blood occurs from the mucous membrane, and in the connective tissue of the body—that of the meninges of the brain and the spinal cord being alone excepted. His aphonia disappears, and he dies with coma 48 hours after first attack. The case was sporadic; the patient was not scorbutic, and had not a hemorrhagic diathesis.

REVIEWS.

ART. XV.—*An Essay, Historical and Critical, on the Mechanism of Parturition.* By WILLIAM LEISHMAN, M. D., fellow of the Faculty of Physicians and Surgeons of Glasgow; Fellow of the Obstetrical Society of London; Lecturer on Medical Jurisprudence, Anderson's University, Glasgow. Printed at Glasgow, and published by John Churchill & Sons. London, 1864. 8vo. pp. 129.

THE subject of the natural mechanism of labour is so important, that we hail with pleasure every effort calculated to elucidate this process. In a modest octavo volume, the title of which we have prefixed, Dr. Leishman, whose attainments and position have greatly favoured his researches, has presented his views on several important points of practical obstetrics; his object being to attract attention to the subject, and to excite an interest which may eventuate in establishing more correct principles for the guidance of the practitioner. We trust that he will persevere in this labour, and extend his investigations to all the various presentations and positions of the fœtus.

In his introduction, Dr. Leishman dwells on the importance of an accurate acquaintance with the mechanism of labour; he considers it as "the keystone of the art of midwifery;" he believes, however, that notwithstanding the numerous publications of the last few years, such knowledge is by no means general among the mass of practitioners. This deficiency he traces to a faulty mode of study, by means of dried bones and phantoms, rather than by patient observation of the whole process of parturition in the living being. It has been regarded more as a mechanical than as a physiological subject.

There is truth, no doubt, in the above criticism, but we do not hesitate to observe that the student who does not, in the first place, become familiar with all the peculiarities of the cranium of the fœtus and of the pelvis of the woman, and who does not completely understand the mechanism of labour as it may be demonstrated by means of the bones, and the assistance of manikins, can seldom, if ever, profit by his clinical experience. The foundation being well laid, the natural process can be advantageously examined; accurate knowledge, however, of the intricate and wonderful physiology of parturition, is not easily obtained. It requires more than the careful observation of a few cases of labour—it demands constant and unwearied attention, not merely for months, but for years, and there are few practitioners, however mature their experience, who may not learn something of the mechanism of labour, whenever the case is in any degree protracted or difficult. The mechanism of labour is not yet fully developed.

The plan proposed by Dr. L. is to trace the history of the science of midwifery, and then to exhibit "the great mechanical laws which guide us in the practice of obstetric art." His historical sketch is very creditable; it manifests that full acquaintance with medical literature which distinguishes our European brethren, and will prove, therefore, very interesting and beneficial to the reader. He considers the publication of the very valuable essay of M. Franz Carl Naëgelé, Professor at Heidelberg, on the mechanism of parturition, as constituting the great modern epoch in the history of obstetrics. This was translated by Dr. Edward Rigby, and published in England in 1829, and, according to Dr. L., received the almost unanimous support of British obstetricians. Dr. L. clearly intimates his opinion, that in Great Britain there has been very little advance in the science since this important event; for, although great attention has been paid to the subject of labour, and many valuable publications have issued from the press, yet owing, perhaps, to intrinsic difficulties, and to the obscure and indefinite descriptions given by writers, the whole subject has become more, instead of less intricate, and hence there is now great discrepancy in the opinions, and, of course, in the practice of obstetricians. Dr. L. hopes that he has, by careful clinical observation, contributed something to elucidate the mechanism of labour, with what success we shall endeavour to show, premising that in this present publication he confines himself to "cranial positions."

Dr. Leishman believes that one great difficulty in the advance of obstetric science is the indefinite use of words. Of the truth of this there can be no doubt. Unfortunately, however, we think that Dr. L. is by no means clear or precise in the use of his own expressions. The very heading of his third chapter may be cited as an exemplification. To a student, what idea is given by the expression, "The *head* in the first position?" Certainly the whole head is not meant. There is a distinction drawn between the face and the cranium, as one or the other descends first into the pelvis. So, also, there must be a necessary distinction whether the top or the base of the head presents, and Dr. L. well knows that there is an important practical difference whether the os frontis, ossa parietalia, or os occipitis appear first towards the centre of the os uteri. There can be no doubt that Dr. L. means by "the head in the first position," a presentation of the upper part of the head, as represented by the sagittal suture, and as observed in the most natural case of labour. This particular portion of the head is denominated the "vertex." This he describes, not as one point, but as extending from the anterior to the posterior fontanel, and from one parietal boss to the opposite. This would constitute an elliptical surface, the long diameter of which would be transverse, and the conjugate would be represented by the sagittal suture. This definition we consider most unfortunate, and has led our author far away from the truth in describing the mechanism of labour. Although the word "vertex" originally indicated the highest point of the head, yet in obstetric language it has been confined to the posterior portion of the top of the head, the region of the posterior fontanel, or, as regards the scalp, that portion where the "hair parts." It is this posterior portion which presents or descends first in natural labour; and the middle of the sagittal suture, which is generally felt at the commencement of labour is not the centre, as Dr. L. would represent, but the most anterior point of the circle which constitutes the "vertex." The greater the flexion, therefore, of the child's head, the nearer will the posterior fontanel approximate the centre of the pelvis, or os uteri, and hence the "short diameters" of the cranium are involved in every case of natural labour.

If, however, the upper part of the head be considered as the vertex, the head would not be flexed when this portion presents, and the long diameter of the cranium, as represented by Dr. L. in his diagram—viz., the occipito-frontal—would be involved. Certainly it is a matter of necessity that a labour under these circumstances would be far more tedious and painful, *cæteris paribus*, than when the cervico-bregmatic or short diameter is concerned. What Dr. L. therefore calls a presentation of the vertex should be termed a presentation of the top of the head, or region of the anterior fontanel; not a natural or favourable presentation, but unnatural, and therefore unfavourable. Indeed, we might dismiss all that he has to say upon vertex presentations, as being foreign to the course of regular labour.

Again, as to the word "presentation," Dr. L. adopts as the best definition, although he regards it as a faulty one, that given by Dr. Tyler Smith, viz., "that portion of the fœtal head felt most prominently within the circle of the os uteri, the vagina, and the ostium vaginæ in the successive stages of labour." Perhaps Dr. L. is correct in considering this as preferable to any other definition given by European authors to the word "presentation," but certainly it is very incorrect. In the first place, the "circle of the os uteri" is very variable, as it is sometimes partially and sometimes completely dilated. It is frequently parallel to the brim of the pelvis; and not unfrequently it is altogether oblique—its plane being directed backwards, or sometimes forwards, occasionally to the right, or, it may be, to the left side of the pelvis. Then, as the head descends through the os uteri, the presentation, following the definition of Dr. Tyler Smith, would be continually varying: when high up, it would be the superior part of the right parietal bone; as it descends and rotates, it would be the right lambdoidal suture; then it would be the upper portion of the occipital bone; then the occipital protuberance; and finally, as the head passes the ostium vaginæ, it would be the sagittal suture. Naëgelé's definition of "presentation" is equally faulty, as being that portion of the child's head felt on the introduction of the finger in the axis of the vagina, and which, we think, has been the cause of several erroneous deductions made by that distinguished obstetrician.

The proper definition of "presentation" is, that portion of the child's head which is towards the centre of the pelvis, or of the dilated vagina, in the different periods of labour. The centre of the pelvis and of the dilated vagina is represented by the axis of the obstetric canal, *i. e.*, by a line drawn perpendicularly through the centre of the superior strait, and through the successive planes of the pelvis, and of the vaginal canal, to its external orifice, as distended by the head *in transitu*.

The particular *point* of the surface of the head which corresponds to this axis must somewhat vary in almost every case of natural labour, as the head is in a state of less or greater flexion. Thus, at the commencement of labour, the middle part of the sagittal suture would be felt towards the centre; then, as the head is more flexed, it would be the posterior part of this suture. To be mathematically accurate, therefore, we must take the centre of the head, or that point within the cranium, at or near the intersection of the bi-parietal and cervico-bregmatic diameters, as that portion which always corresponds to the axis of the obstetric canal of the pelvis.

Dr. L. does not give us a definition of the word "position," which is unfortunate; although he continually speaks, in unison with all authors, of various "positions of the head" or cranium, yet he very frequently uses the word as synonymous with presentation, from which it is entirely distinct; thus he speaks of "four ordinary vertex presentations," evidently meaning the four ordinary positions of a vertex presentation, as a presentation may be unvarying from the beginning to the end of labour, while a position may be constantly changing during this process. Cases are upon record where the child's head has rotated not merely to the extent of a semicircle, but even of a whole circle, in its passage through the pelvis.

Again, our author seems to be at a loss to determine when the head has passed through the brim of the pelvis, or what is meant by the expression "at the brim." We agree with him that this is a very important point, but we cannot perceive that he has elucidated this subject by stating that the head is "'at the brim' until its bulk has passed this part, which does not take place until the head has begun to experience some resistance from the floor or converging walls of the pelvic cavity." Hence, he says, the vertex passes first, then the bi-parietal diameter, and then the occipito-frontal diameter. All this is inaccurate; the occipito-frontal diameter, in a natural labour, is not concerned; flexion occurs, and it is the cervico-bregmatic and bi-parietal diameters that are involved, and it requires no extended observation to perceive that the resistance to the descent of the head is at the parietal protuberances; that when they pass any particular line or plane of the obstetric canal, the head, in a mechanical point of view, has also passed. As soon, therefore, as the parietal protuberances are free from the os uteri, or from the margin of the superior strait, the cranium has virtually passed through the brim, and this, in opposition to the author's opinions, is accomplished long before the top of the head reaches the floor of the pelvis. Hence, when the bi-parietal diameter is beyond the rami of the ischia, the head is out of the pelvis, although the face may still be within the cavity; and hence, also, when the orifice of the vagina has been sufficiently dilated to permit the escape of the parietal protuberances, the head is in reality delivered, the forehead and face passing out with great rapidity.

The head enters the superior strait, very universally, *obliquely*. Our author notices three kinds of obliquity. Since the time of Ould and Solayres the obliquity of the head, as regards its antero-posterior diameters, has, with few exceptions, been adopted as a fundamental truth by obstetricians. Of course there are many exceptions to this proposition, the head not unfrequently being transverse, and occasionally the occiput is at the pubis, and the os frontis at the sacrum. Some have regarded the transverse position as the most frequent; and some, indeed very many, consider it as constituting an important variety of cranial positions. Practically, however, it is of very minor importance, as Baudelocque, Velpeau, Naëgelé, &c., have fully established the fact that such transverse positions are, with few exceptions, converted into oblique positions.

The second variety of obliquity is that of the bi-parietal diameter. This has been urgently insisted upon by Prof. Naëgelé as a fundamental truth of practical importance. His admirers have adopted and tenaciously maintained this opinion, so that it has become the prevalent theory of modern obstetricians. We are happy to find, however, that Dr. Leishman joins Velpeau, Cazeaux, Matthews Duncan, West, and Patterson in opposition to this new dogma. He opposes it as it countenances the idea that the brim of the pelvis is horizontal, instead of being at an angle of sixty degrees; also, that if this bi-parietal obliquity existed, the ear of the child could be readily felt near the pubis at the commencement of labour, as the right parietal boss is first recognized, according to Naëgelé, by the finger on its introduction into the cavity of the pelvis, and therefore M. Naëgelé considers this the lowest part of the head; but this is incorrect, as the ear cannot be reached without great difficulty.

M. Naëgelé maintains that the sagittal suture divides the dilated os uteri unequally, the smaller segment being posterior, and that frequently the os is inclined backwards. Both these propositions are denied by Dr. L., who asserts that the os uteri occupies generally the centre of the brim, and that the sagittal suture traverses the middle of the pelvis, and is directly opposed to the last bone of the sacrum. This latter remark he has proved by various experiments, especially by introducing the short arm of a rectangular sound into the cavity of the vagina, so that the angle of the sound shall be at the coccyx, when it will be found that the extremity of the short arm, carried to the middle of the pelvis, will be opposed to the sagittal suture.

We fully coincide with the criticism of Dr. L. as to the lateral obliquity of the head. We have never believed nor taught it, being fully satisfied, by constant observation, that the sagittal suture is opposed to the coccygeal region, or proper floor of the pelvis. The real cause, we believe, of the mistake so universally made upon this subject arises from the faulty definition of the word "presentation," as being that part of the head which is felt nearest to the os vaginæ, instead of that part which is at the centre of the superior strait, at the commencement of labour, and is opposed to the coccyx. Another and a very important source of error made by obstetricians is to regard the arch of the pubis as the bottom of the pelvis, instead of being situated at its anterior portion, the bottom or floor being at the coccyx. Did time and space permit, this subject might be argued *in extenso;* but it will be sufficient to observe at present that the right parietal boss, which in a transverse, and even in an oblique, position of the head can be so readily felt near the os vaginæ, has to descend, during the progress of labour, to the tuber of the ischium before the head can pass out of the pelvis through the inferior strait.

Another argument of M. Naëgelé, in favour of this lateral obliquity, is the usual position of the *caput succedaneum* upon the superior and posterior portion of the right parietal bone. Dr. L. feels the strength of this argument, but would sanction the explanation of Dr. Matthews Duncan, who says that the position of the tumour is not dependent simply upon the os uteri, but also on the resistance of the vagina; which being greater posteriorly than anteriorly, prevents any swelling over the left parietal bone, and determines it towards the right, where the resistance at the orifice of the vagina is trifling. There is much truth in this observation of Dr. Duncan, but it is by no means the whole truth. We believe that the caput succedaneum on the right parietal bone is never formed, *exceptio probat regulam*, at the os uteri, but always after the head has entered the pelvis, and is driven strongly against the arch of the pubis, and before rotation is perfected. It is under these circumstances that the scalp over the posterior superior angle of the parietal bone, being opposed to the os vaginæ, and therefore unsupported by the soft or bony tissues, is distended by watery or bloody effusions between it and the bone, sometimes to an enormous degree. It is very incorrect, however, to call this, we think, the presenting part, for rotation is not yet complete, and delivery does not occur until the parietal protuberances have approximated the tubers of the ischia, and the occipital protuberance appears under the arch. The real presenting part, or that which is towards the centre of the inferior strait, at this time, is the posterior extremity of the sagittal suture. If this view be correct, no argument whatever can be drawn, as to the lateral obliquity of the head at the brim, from the location of this caput succedaneum.

Nevertheless, in cases of unyielding os uteri, a caput succedaneum is formed at the os uteri, but not located over the right side of the parietal bone, but over the sagittal suture and the superior part of the occiput. In this observation we are confirmed by M. Cazeaux, and, if correct, it is in direct opposition to the teachings of the German professor, and fully confirms the opinion that there is a parallelism between the cervico-bregmatic circumference of the head and the plane of the superior strait of the pelvis.

The third obliquity noticed by Dr. Leishman is that of the occipito-frontal diameter, indicating flexion of the head. He acknowledges that this "almost invariably takes place," although it varies exceedingly in different labours, the flexion being very great when the head is large, or when there is a contraction of the superior strait, and often very slight when the head is small, or the pelvis large. All this is true, but there is another cause, not noticed by Dr. L., why the flexion of the head ensues in almost every case of labour, viz., the resistance of the os uteri. It is at this orifice that flexion occurs, the degree of which is in proportion to the tonicity of its tissues. Hence, however large may be the pelvis, if the os be at all rigid, flexion may be great, and in practice we generally find that great flexion exists, even where the head is small, as the os uteri seldom dilates more than is absolutely necessary for the transit of the cranium. Now it seems strange that Dr. L., who, in the first part of his essay, contends that the vertex first passes, and then the bi-parietal diameter, and then the occipto-frontal, does not perceive the incongruity of this proposition, with the statement that this flexion "almost invariably takes place." The slightest demonstration clearly indicates that just in proportion as flexion occurs, the occipito-frontal diameter loses its parallelism with the oblique diameter of the brim, and that where flexion is perfect, it is the cervico, or sub-occipital bregmatic diameter which corresponds to the oblique diameter of the brim. This is a fact so easily demonstrated, and has been so long taught by such men as Solayres, Baudelocque, Velpeau, Cazeaux, Dewees, &c. &c., that we must again express our surprise that Dr. L. should speak of the occipito-frontal diameter as coming down parallel to the brim in ordinary cases of vertex presentations.

Dr. L. has very correctly insisted that, in studying the mechanism of labour, a distinction should be drawn between the first and the second part of this process; that during the first portion the head descends in the direction of the axis of the brim, until it reaches the floor of the pelvis, and then it passes in the direction of the axis of the outlet. As soon, therefore, as the head has descended to the bottom of the pelvis, other important and interesting changes ensue.

The first of these noticed by Dr. L. is the process of rotation, the occiput describing a spiral line from the left towards the right anteriorly in its passage. The cause of this rotation has been explained by Dr. Tyler Smith, not to us in a very satisfactory manner; but, no doubt, as Dr. L. observes, more nearly approximating the truth than that given by any British accoucheur. Dr. Smith refers it to the approximation of the spines, and the inclination inwards of the planes of the ischia. This statement is correct, as far as it goes; but it is the approximation of the sides of the pelvis anteriorly, and also the continuation of this double inclination by the soft tissues closing the outlet of the pelvis, which insures, as a mechanical necessity, the rotation of the head during its descent. It has been seriously agitated, particularly by M. Cazeaux, whether the rotation is not effected entirely by the soft parts, without any influence from the bones of the pelvis. This we deem incorrect, but regard both as essential, for the perfection of rotation.

Is this rotation perfect? M. Naëgelé maintains the negative, and is supported by his innumerable followers, including our author. They all insist that the head passes obliquely as regards its bi-parietal diameter, not merely at the inferior strait, but also at the vulva; the right parietal protuberance being delivered first. Dr. Leishman even affirms, that if a cord be extended along the median line from the coccyx to the symphysis pubis, during the transit of the head, and a mark made upon the child's head corresponding to this line, it will be found passing over the right branch of the lambdoidal suture towards the left branch of the coronal.

This demonstration seems at first sight very conclusive, especially to the inexperienced; but let it be remarked that the practitioner must have embraced a quiescent moment, "during the absence of pain," to extend his line, and make his mark upon the scalp of the child. But it is well known that, owing to the resiliency of the tissues, the child's head retraces its course as soon as the bearing-down effort is suspended. Hence, if the head were "direct" during a pain, it would become oblique as soon as the pain ceased. If, therefore, Dr. L. had thrown aside his string, and passed his finger into the rectum during the height of a pain, and then traced the course of the sagittal suture, we think that he would have found it running very nearly, if not exactly, on the median line, corresponding to the raphè of the perineum. A little attention, moreover, would indicate that the parietal protuberances correspond, simultaneously, to the tubers of the ischia on either side, and subsequently, to the margins of the orifice of the vagina; in other words, that the occipito-bregmatic plane passes through the inferior strait, and through the ostium vaginæ, parallel to the planes of these openings. This observation is restricted to those cases where the head and pelvis are of their usual relative size; and where there is considerable resistance from the tissues of the perineum, as observed in primiparous patients. Of course, if the head be small relatively, or there be great relaxation of the soft parts, it will very often be delivered in the oblique manner contended for by M. Naëgelé; it passes so quickly, that there is no time, as it were, for the completion of its changes. The relaxation of the tissues not only renders complete rotation unnecessary, but removes one of the accessory causes of such rotation.

As to the propriety of "*supporting the perineum*," Dr. L., after a learned allusion to the history of the practice, and its almost universal adoption by the best practitioners in Europe and America, boldly ventures to term it a "barbarous relic of meddlesome midwifery." How a gentleman, who urgently recommends the study of the mechanism of labour, not only in the lecture-room, but at the bedside, and who seems to be well versed in the laws of mechanics, can declare that the supporting of the perineum is not only useless but injurious, is, to us, a matter of great surprise. We cannot enter upon the question at present, but merely observe that, while we agree with our author that much mischief has resulted from the ill-timed and unscientific, not to say violent pressure upon the perineum, nevertheless the rule to "support the perineum" is one defensible, we believe, on every principle connected with the physiology and the mechanics involved in the process of labour at its termination.

"*The other cranial positions*," or, as we should express it, the other positions of the vertex, omitting the fifth and sixth of Baudelocque, are then examined.

As to the *frequency* of the right occipito-anterior, as compared with the left occipito-anterior, and especially with the right occipito-posterior, great discussions have taken place, as we should think, to very little purpose: the practitioner who understands the mechanism of labour need not trouble himself as to the relative number of cases of any particular presentation or position that we meet with in practice; he is prepared for any emergency. We have no faith either in hospital reports of the various positions which the head may assume at the very commencement of labour. Diagnosis, under these circumstances, is too difficult, in many instances, even to the experienced accoucheur, and certainly to the tyros of the profession by whom hospital reports are usually prepared, to permit us to give much credence to the statements presented by the "internes" of obstetric institutions. The difficulty becomes greater as few attempts are made to establish a diagnosis, as M. Naëgelé himself observes, until the head has descended through the brim. Dr. Leishman believes that M. Naëgelé is rather extravagant in his declaration of the comparative infrequency of the right anterior and left posterior positions of the vertex, as compared with the left anterior and right posterior positions. Our author would state the proportion of 67 per cent. for the left anterior, about 9½ per cent. for the right anterior, 21 per cent. for the right posterior, and 2½ per cent. for the left posterior positions. Our experience would greatly increase the number of the right anterior, and especially of the left posterior, or second and fourth of Naëgelé (second and fifth of Baudelocque).

As to the disposition of the occiput to rotate forward, in the occipito-posterior positions, the whole profession is much indebted to M. Naëgelé for establishing the fact by careful clinical observation, that this anterior rotation will generally spontaneously occur. This disposition, according to M. Naëgelé's report, is in the proportion of thirty-one to one; our author would place it at twenty-four to one. The knowledge of this predisposition is of great importance in the first place to diminish the anxiety of the practitioner in all these occipito-posterior positions, and also to encourage him to assist in the accomplishment of this natural predisposition, so as to prevent, *in all cases*, the posterior rotation of the occiput, which all acknowledge as sometimes occurring, and which is always unfortunate.

Why the head should rotate forward, in these positions, is not explained. Dr. Tyler Smith makes the determining cause the spines of the ischia. Dr. Leishman indorses Simpson and Cazeaux in the opinion that too much importance has been given to the spines of the ischia, and that the anterior rotation is dependent upon the resistance of the soft parts, against which the head is forcibly impinged by the contractions of the uterus. Whatever truth there may be in this assertion there is still no explanation given why the occiput sometimes rotates backwards. We think that it is the spines of the ischia, and the perpendicular line through their extremities which constitute the demarcation between the posterior and anterior inclined planes. If, therefore, the occiput in its descent strikes posteriorly to the spine of the ischium, it is depressed towards the great sacro-sciatic foramen and the sacro-sciatic ligaments, at such an angle, that it will be determined posteriorly.

As to the "torsion of the neck," which is usually described by authors as taking place during the rotatory motion of the head, our author embraces the opinion of M. Gerdy, that no such twisting of the neck occurs, maintaining that the shoulders rotate whenever the head rotates. This we consider altogether erroneous; there are exceptions, but nature's rule is that the shoulders remain oblique when the head rotates, hence necessitating the "*restitution*" of the head after its delivery.

In posterior positions of the occiput, when the head approximates the outlet, we cannot agree with the author, who declares that the bearing down efforts of the mother are "chiefly directed" towards the anterior part of the occipito-frontal diameter. They are directed, in this instance, as well as in all other true vertex presentations towards the posterior part of this diameter, through the medium of the spine. This fact is of great practical importance.

Our author also declares that in these same cases, the forehead gets "*under*" the arch of the pubis. This is often true when the head is comparatively small, or the perineum greatly relaxed; but on ordinary occasions Baudelocque is far more correct in stating that the os frontis is *behind* the pubis; and, indeed, during the process of delivery often remounts still higher until the occiput is delivered over the fourchette. This fact has also an important practical bearing.

Again, Dr. L. notices the fact that, in these occipito-posterior positions of the vertex, there may be a conversion into a face presentation, but well observes that this is very rare. The fact, however, should be remembered by the scientific practitioner.

Dr. Leishman calls attention to Dr. West's division into "bregmato-cotyloid and fronto-cotyloid positions" of the cranium; although not approving of the division, yet he asserts that it is of practical importance, as, in the first case, rotation, he says, of the occiput will be forward, and in the second, backward. We think an important error has here been committed, owing to the adoption of but one presentation of the cranium, recommended by Naëgelé; for the truth is that the bregmato-cotyloid position implies a presentation of the vertex, or region of the posterior fontanel, while the fronto-cotyloid position implies a presentation of the sinciput, or of the region of the anterior fontanel. These are, therefore, different "presentations," and not different "positions" of the same presentation. In the "bregmato-cotyloid position" the cervico-bregmatic diameter is concerned, but in the "fronto-cotyloid position" the occipito-frontal, constituting, therefore, a radical difference between the two cases. In the latter, the practitioner should always render assistance; neither the woman nor the child can be regarded as safe without such assistance being rendered; while, in the former, the natural processes may be, and usually are, sufficient; although, even here, the instructed practitioner will remember that the occiput will occasionally rotate posteriorly, which should be prevented.

In all the posterior positions of the vertex, should the process of rectification, *i. e.*, of rotation of the occiput forward, be left to nature, or should art interfere? M. Naëgelé and his admirers are disposed to trust such cases to the natural efforts. Hence we find that M. Naëgelé says that in ninety-six of his cases, three rotated posteriorly, or one in thirty-two. Simpson and others report one in twenty-five. Now as all acknowledge that the posterior rotation is attended with danger to the child, and not unfrequently to the mother, we frankly avow that such rotation should never be allowed, and, as far as our experience goes, can always be prevented.

But the question when and how to operate has not been definitely settled. Dr. Leishman suggests that the "long, straight forceps" may be, in some instances, applied cautiously when the head is still movable above the brim, to affect this change; but acknowledges that he and some of his friends have generally failed in the attempt. We can perceive no justification, under any circumstances whatever, for this use of the forceps, straight or curved, when the head is movable or when it is oblique. The operation itself is difficult, and will frequently prove impracticable, and must always be dangerous to the child and to the tissues of the parent. It is contrary also to the fundamental principle inculcated by Naëgelé, that the occiput will almost invariably rotate forward, without any operation whatever; and also that it is impossible to determine whether the obliquity of the head, observed thus early in labour, will not speedily disappear.

Our author advises that the attempt at rectification should not be made, as a general rule, until the head reaches the floor of the pelvis. We think this rule requires some modification, as we have no doubt that the means of rectification should be employed immediately after the head has escaped through the os uteri, whether it be high or low in the pelvis; in other words, as soon as there is a natural disposition to rotation, caused by the anterior inclined planes of the pelvis; morover, such efforts should be carefully persevered in until rotation be perfect.

As to the "means of rectification," the fingers will very generally answer. Our author quotes Dr. Meigs as recommending pressure upon the posterior margin of the parietal bone, and Dr. West as acting behind the ear, so as to cause the face to ascend and rotate backward. Why such advice should be indorsed by Dr. Leishman, in preference to that recommended more than eighty years ago by Baudelocque, and sanctioned early in this century by Dr. Dewees, of making pressure on the anterior and lateral part of the os frontis, is to us inexplicable. This last mode has the advantage of directing the force on the long arm of the lever, represented by the head, which renders it very efficient, and has been for so many years successfully employed by the disciples of the two distinguished teachers we have mentioned, that we thought its superiority would not have been impugned. In our own practice we have always succeeded, unless there was some unusual complication, from the relative size of the head, the rigidity of the tissues, etc.

When such complications exist, we are happy to find that Dr. West has recommended the vectis, and our author has given his influence in favour of this instrument. For some thirty years we have invariably employed the vectis in all these persistent occipito-posterior oblique positions, and we are happy to add that in no instance within our recollection have we failed in causing an anterior rotation of the occiput, either by the fingers or the vectis. Hence we never resort to the forceps in such cases, and consider their application as very difficult, injurious, and often impracticable.

We have been induced to make the above criticisms of Dr. Leishman's views on the mechanism of parturition in no captious spirit, but with a sincere desire to discern truth and to correct error on this all-important subject, and thus to contribute something at least towards the improvement of the science, and hence of the practice of obstetrics. We feel persuaded that many of the opinions of Professor Naëgele have been too hastily adopted, and that his simplification of the presentations of the cranium, so far from being useful, has been productive of great mischief, both theoretically and practically. We trust, therefore, that the talents, industry, and zeal which Dr. L. has so clearly manifested in his pursuit of knowledge will have their legitimate and full reward; and that he, with many co-labourers, will make a complete revision of the mechanism of labour, and thus establish better principles for the guidance of the practitioner. H. L. H.

Art. XVI.—*Gunshot Wounds and other Injuries of Nerves.* By S. Weir Mitchell, M. D., George R. Morehouse, M. D., and William W. Keen, M. D., Acting Assistant Surgeons U. S. A., &c. 12mo. pp. 164. Philadelphia: J. B. Lippincott & Co., 1864.

Reflex Paralysis. Circular No. 6, Surgeon-General's office, March 10th, 1864. By A. A. Surgeons S. W. Mitchell, G. R. Morehouse, and W. W. Keen, U. S. A. pp. 17.

Lectures on the Physiology and Pathology of the Nervous System. By C. E. Brown-Séquard, M. D., F. R. S., Fellow of the Royal College of Physicians of London, &c. &c. Philadelphia: J. B. Lippincott & Co., 1860.

Clinical Observations on Functional Nervous Disorders. By C. Handfield Jones, M. B., &c. pp. 585. London: 1864.

One of the many important improvements introduced into the Medical Department of the United States army during the Surgeon-Generalship of Dr. Wm. A. Hammond, was the establishment of a number of special hospitals, for the treatment of certain classes of cases. Not only has the particular experience and skill thus acquired proved beneficial to the patients under care, but science has profited by the concentrated and prolonged observation of facts thus made possible; facts, many of which might otherwise have been lost for want of comparison and record.

Diseases and injuries affecting the nervous system are especially worthy of such specialization, because of their importance, and of the rarity with which lesions of the nerves have been made the subjects of clinical study. The great text-books of Military Surgery refer but briefly to injuries of the nerves; none, in the English language, at least, giving any systematic account of them, or dealing satisfactorily with their treatment.

The authors of the two *brochures* whose titles are placed first above, have made industrious use of the opportunities afforded them. The special labours and studies of whose results they give account, began in May, 1863; and embrace the history of about one hundred and twenty cases, all of whose details had been carefully reported in the note-books of the hospital. The topics dwelt upon are, chiefly, wounds of nerve centres, wounds of nerve trunks, or their branches, and the resulting alterations in nutrition, sensation, motion, calorification, &c., and the treatment of nerve lesions.

Unfortunately, it is often impossible to determine exactly the amount of injury sustained by a nerve or nerves. The nerve whose distribution finally remains affected, must be inferred to be the one principally involved in a wound, the precise nature of which is not capable of inspection, especially in a hospital to which the patients are not brought directly from the field. Forty-eight cases of severe gunshot wounds of nerves were selected by Dr. Mitchell and his collaborators, to study the *immediate* effects of such injuries. Most of them involved the nerves of the upper or lower extremities. Of thirty-one not wounded in the lower limbs, seven fell instantly, unconscious; only one of these bleeding largely. None of the twelve who fell with wounds of the legs became unconscious. Fourteen of the eighteen wounded in the arm continued standing; two became senseless; and two fell but remained conscious. Of those wounded in the neck or axilla, one fell senseless, four fell conscious, and eight did not fall. A general and nearly instantaneous weakness, or *shock*, was felt by almost every one of the whole number. It is to be inferred that the shock from a nerve-wound is likely to be most severe in wounds about the upper third of the body.

Loss of motion was total, in the limb affected, in thirty-two cases; of which some had entire, and others partial loss of sensation also. A difficult fact to explain is, the great frequency with which a gunshot injury of a nerve causes total loss of motion and very little of sensation; as if the sensitive filaments might be less susceptible to foreign impressions; a conclusion which our authors naturally hesitate to adopt. Acute pain, elsewhere than in the wound, was rare as an early symptom of nerve lesions.

Of wounds of nerve centres, we have the fullest account of those involving the spinal marrow. In the first case narrated at length, one point of interest is, the "marvellous success" of the treatment of bedsores, by Brown-Séquard's plan, of applying alternately, for ten minutes or more at a time, iced water and hot poultices. Referring to the lectures of this distinguished writer (p. 260), we find his theory upon the subject to be, that *nervous irritation*, acting upon the bloodvessels, and thus disturbing nutrition, is the cause of sloughing from fractures of the spine. Without entering upon the discussion of this theory at present, it may be remarked, that the success of the practice has no necessary dependence at all upon the correctness of the rationale asserted for it. If bedsores be, as has been more commonly supposed, due not to an irritative, but to a *paralytic* affection of local nutrition, the means used to make strong and varied impressions upon the part may be expected, upon this view, quite as well as upon the other, to be beneficial. The second case of spinal lesion, in the Christian Street Hospital, afforded the agreeable result of a rapid and complete recovery, from considerable paralysis of one arm following a wound of the neck, after a tooth (which pressed upon the tongue) and the ball, which had lodged in the body of the third vertebra, had been removed.

Spinal commotion is described as being not at all uncommon in the experience of our surgeons; although similar cases are rare in the works of authors on military surgery. A ball passing over or alongside of the spine causes, without fracture, or with merely a chipping of the spinous processes, a paralysis of one or more members; which may be as severe and obstinate as in any case of fracture. Violent commotion of the nerves, where they pass out of the intervertebral spaces, is very reasonably supposed to account for the more permanent of these effects. In a few cases, doubt may be entertained whether the diagnosis should be of spinal commotion or of reflex paralysis. When the ball has passed over a region containing no large nerve trunks, and but few sensory filaments, the former may be concluded upon, if the missile came in contact with the spinal column. A minié ball may "radiate" its effects upon tissues, to a distance of an inch, at least.

Exquisite *muscular hyperæsthesia* was remarkable in one case, but occurred prominently in several examples of contusion of the lower part of the spine; sometimes with cutaneous hyperæsthesia also.

One wound of the sympathetic nerve, only, has presented itself to Drs. Mitchell, Morehouse, and Keen. That it was of that nature was inferred, without possibility of demonstration, as the patient recovered. The ball entered the right side of the neck, and went out near the angle of the left jaw. The right pupil was very small, the left unusually large; ptosis of the right eye also occurred; and that eye appeared rather smaller than the other. After exercise, the right side of the face became flushed, while the left was pale; no difference in the temperature of the two sides was discovered during repose, on careful thermometric examination within the mouth and ear. Another hypothesis than that of wound of the sympathetic is alluded to, as suggested by facts made known by Budge, Waller, and Brown-Séquard, as to the relations of the eye with the cilio-spinal portion of the cord; extending, according to the last-named observer, as low as the tenth dorsal vertebra. No evidences of spinal shock, however, existed in the case described.

A single case of wound of the fifth pair was treated by our authors. Reflex paralysis of the left arm followed, cured by electricity. Of the *portio dura* of the seventh pair, three cases are mentioned, with interesting details. In one of them, taste was greatly impaired on the side of the tongue corresponding with the injury. Facial motor paralysis was marked in all.

In the fifth chapter of the treatise we have been so far following, injuries of nerve trunks are thus classified: Direct injury of nerve trunks by a missile; commotion from the near passage of a missile; contusion, as from a blow; injury from dislocation, or from attempts at its reduction; cicatrix pressure; extension of diseased processes from wounded nerves to those which are healthy.

Contusions of nerves, being common in civil practice, are referred to as having been best studied by M. Duchenne. Rarely grave in their first effects, severe blows upon nerves are prone to give rise to ultimate consequences as fatal to functions as those which arise directly from a ball wound itself. Not dissimilar from these are those obscure accidents to the brachial nerves which sometimes arise from dislocations of the humerus or attempts at reduction. Among the points of interest brought out are, that atrophy from contusion of a nerve may involve only certain fibres of a muscle and respect the rest; and that atrophy is sometimes accompanied by a contracted state of the muscle.

Pressure upon nerve trunks by cicatrices in which they are involved, was seen by our authors, chiefly in superficial shell wounds. Sometimes the position of a limb had an important influence upon the nerve so involved.

Of the last class of cases above enumerated—where extension of disease is traced from the site of injury along the nerve trunks to others which become likewise affected—Drs. Mitchell, Morehouse and Keen treat somewhat fully; as, in their words, "the view taken of them is in some degree novel, and just such cases have, as we suppose, been misunderstood by at least one very distinguished observer" (Duchenne).

Two striking instances are narrated in detail, showing that, a nerve being injured, other trunks of the parent plexus may become secondarily affected. Two explanations are open—that of a "reflex effect," and the theory that inflammation originating at the wound travels backward along the hurt nerve, and falls on one or more stems of the main trunks. Duchenne adopts the former view; using the expression that "there exists a sort of *solidarité* between all the nerves of a limb, so that no one can be suddenly destroyed without compromising the general innervation of the limb." Our authors prefer the other theory; but, it appears to us, upon slender evidence. Clinical accounts of extended inflammation of nerve trunks are not afforded, even in their own reports, such as to enable us to diagnose such a morbid process satisfactorily; and, whatever be the theory accepted to explain reflex paralysis, the cases referred to would seem to belong to that category.

The very remarkable effects of wounds of nerves upon the nutrition of parts are declared, by the authors of the treatise before us, to have found no full record anywhere—Duchenne saying more of them than any other writer—while the vivisections of the physiologists have supplied some interesting facts.

Atrophy of the muscles is among the most marked of these effects, either total in a muscle or series of muscles, or affecting a lateral or longitudinal part of one. In rare cases the muscle, palsied as to motion, has scarcely seemed to lose bulk at all. In such examples, the electro-muscular contractility is sometimes intact, sometimes lessened. *Contraction* may occur, either from atrophic alteration, paralysis of an *opponent* muscle, or spasm in the muscle itself, caused by a lesion of the nerve. This last may take place without any atrophy. The spasm can be overcome by partial volitional control, but returns again. Tremor is present in some instances; the electric properties of the part are entire. Etherization relaxes the tonic contraction, and injections of atropia into the body of the muscle produce temporary or even permanent relief, which does not happen with the other forms of contraction.

No relation being strictly traceable between the atrophy present and the extent of the paralysis, there would appear to be in the muscles, "motor nerve fibres and nutrient nerve fibres." From the effects of spinal injuries, our authors are induced to refer the "animating centre" of the nutrient nerve fibres to the spinal column. They do not say spinal *cord;* does this mean to leave room for added or modifying influence of the *ganglia* outside of the cord? While asserting, however, that, as the consequence of nerve injury, the muscles may be paralyzed, sensation destroyed, or nutrition attacked, and declaring a belief that the "nutrient nerves" are *sympathetic* fibres, our authors decline, at this point, discussing the modus operandi of such a disturbing agency.

Paget, alone, is cited as having anticipated the history of the cases given to show the singular changes of the skin under nerve lesion. But Legouest[1] certainly describes similar phenomena; though somewhat less fully. He speaks of the pain attending them as extremely acute and obstinate, lasting sometimes the life of the patient, and, in regard to the appearances, "*la peau devient excessivement fine, et se colle, pour ainsi dire, sur les os: les articulations des membres s'enroidissent, &c.*" The description of Paget[2] is of "glossy fingers, tapering, smooth, hairless, pink, ruddy, or blotched as if with permanent chilblains," and affected with severe neuralgia.

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[1] Traité de Chirurgie D'Armée. Paris, 1863, pp. 878–9.

[2] Med. Times and Gaz., London, March 26, 1864.

Among fifty partial nerve injuries from gunshot, in the Christian Street Hospital, such symptoms occurred in nineteen. They do not belong to instances of complete destruction of the nerves; they have no definite time of commencement, nor term of duration. The palm of the hand and the dorsum of the foot are their most common seats. An eczematous eruption was a constant accompaniment of this state of things; in a few it alternated with the pain. The nails became much altered, showing a curve in the long axis, an extreme lateral arching and retraction of the skin of the third phalanx, exposing the matrix. No deformity of the nails in tuberculous patients approaches this. In the toes, ulceration sometimes occurred at the angles.

Pain always attended this state of things. It was, usually, of a very peculiar, burning character, probably dependent upon nutritive alteration of extremities of sensitive nerves.

A condition of the joints seldom described (*see* Legouest, cited above) in connection with nerve lesions, is characterized as closely resembling that belonging to subacute rheumatism. Allusion is made to the hypothesis suggested in this Journal[1] by the late Prof. J. K. Mitchell, that rheumatism is of spinal origin, as receiving a certain amount of support from these facts, showing rheumatoid symptoms clearly traceable to a neural source.

After complete section of the nerves of a limb, our authors report that the skin is commonly dry, while incomplete injuries affecting innervation give rise to very variable consequences in regard to the secretions. We may have occasion presently to revert for a moment to the subject of these statements. They found the line of perspiration, in some paralyzed cases, so accurately defining the edges of the sensitive skin, as to afford means of designating the nerve injured. Very acid sweats are recorded as occurring in one case of gunshot wound of the brachial nerves.

A chapter is given, in Dr. Mitchell's book, to the particular consideration of traumatic lesions of sensation. *Muscular* hyperæsthesia was several times witnessed in the Christian Street Hospital. Anæsthesia, as previously remarked, is a less frequent and less permanent symptom than motor paralysis, the explanation of which fact is not discerned. Legouest makes the same statement,[2] but equally without explanation. Earlier recuperation of sensory functions may, as our authors observe, be in part accounted for by the constant "automatic excitation" of the sense of touch in all parts exposed to external influences, while no such stimulus to impaired mobility occurs.

The only sufficient test of perfect paralysis of the cutaneous nerves is the *electric brush.* The bearing of the information thus obtained, upon prognosis, is obvious and important.

Not dwelling upon *darting*, neuralgic pain, and *aching*, both of which are common after wounds of nerves, special attention is devoted to the peculiar *burning* pain already mentioned. It seems to be generally superficial, is sometimes trivial, but often an extreme torture, affecting by sympathy the whole body, so as to disturb the general health. The part becomes exquisitely hyperæsthetic. The patient avoids even the least exposure to the air, keeping the surface constantly wet, rather for the effect of moisture than of coolness. Occasionally he grows "hysterical," the whole body acquiring a morbid sensitiveness to every movement. Two men found ease from pouring water into their boots, as if the vibrations in walking were thus diminished. Cold weather lessened these pains; heat, and hanging the part down, increased them. The temperature was always found to be higher at the seat of this burning sensation, than either in the surrounding parts, or at corresponding points on the other half of the body. This last is an interesting fact, when compared with some results of physiological experiments, in a theoretical aspect. Since nutrition is shown, by the "denuded and altered skin," &c., to be *impaired* in these cases, we have, in them, instances of increase of temperature with diminution of nutritive activity not easily reconciled with some of the propositions in regard to the influence of vaso-motor nerves on nutrition, made by Brown-Séquard.[1] Of this a word further hereafter. The writers who give the graphic accounts we are quoting (only too briefly) satisfied themselves "that the immediate cause of burning pain lies in the part where the burning is felt," the probable source of it being alterations in the circulation and nutrition of the tissues to which the extremities of the wounded nerve are distributed. The agents which give relief to the pain "are those addressed to the spot where it is felt, and not to the cicatrix." (p. 105.)

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[1] Am. Jour. of Med. Sciences, vol. viii. p. 55.

[2] Traité de Chirurgie D'Armée, p. 83.

A case is fully described in which, among other remarkable features, it is stated that sensibility was found to exist in the median distribution, thirty months after a portion of the nerve had been removed by Medical Inspector Pineo, U. S. A. Our authors are, in their question as to its reproduction, apparently unmindful of a mode of reunion probable in such a case; viz., the contact of the divided ends of the nerve, reunited by the contraction of cicatrization.

Many interesting remarks are made by Drs. Mitchell, Morehouse, and Keen, and illustrated by clinical examples, upon the subject of the influence of nerve lesions on motility. We may leave these at present, to be perhaps referred to again in connection with reflex paralysis.

A brief account only is given of some observations, carefully made, to determine the condition of calorification following injuries of nerves. Using, after disappointment with other means, Becquerel's thermo-electric disks, with a very delicate galvanometer, they found numerical comparison to be made impossible by the great amount of the differences; the needle moving to the limit of its arc of motion in nearly every case. The results, however, are not without interest.

The member, the nerves of which were affected, was nearly always colder than the other, whether the nerve lesion was extensive or trifling. In two cases there was no difference. Five had a higher temperature in the wounded limb; in all but one of these the burning pain existed. None of the cases thus examined had complete division of the nerves, except those of the seventh pair. In the only one of the latter which was tried no difference in heat was found between the two sides.

The concluding chapters in this work are valuable, especially on account of their positive statements in regard to the value of electricity—"faradization"—in the diagnosis, prognosis, and treatment of injuries of nerves. From a large and carefully-considered experience, they are ready to pronounce very favourably of its use. They confirm, almost without exception, the principles asserted by M. Duchenne.[1] By the presence or absence of electro-muscular sensibility (that property by which a muscle becomes the seat of pain when faradized) we can diagnosticate the degree of remaining innervation, and thus predict the probable ending of the case in recovery or hopeless paralysis. It is remarked that volitional control over a muscle may exist when it does not contract under electricity; and electro-muscular pain may be produced when faradization causes no motion at all.

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[1] Lectures, &c., p. 205, Prop. 12.

[2] Legouest, op. citat., p. 879.

Diagnosis in this mode is more easy after two or three months, when all the effects of *shock* are over, than soon after the wound. Continued and persevering faradizations are advised in doubtful cases, at long intervals; hoping, of course, in each case, for further repairs of nervous tissue and function.

Atrophies of muscles disappear, and local nutrition exhibits a singular stimulation, under the induced currents. They should be employed daily, for ten or fifteen minutes at a sitting; and it is remarked that "the treatment of atrophied muscles may be an affair of months, or even of years." Great confidence in the benefit of this treatment is expressed. With it, resort was also had, with frequent advantage, to the douche (alternately of hot and cold water), passive motion, and shampooing. The "burning pain" was most successfully treated by *blistering* the part with cantharides; sometimes again and again. No mere palliative seemed to do it more good than the patient's own instinctive method of keeping it wet all the time.

The paper on "Reflex Paralysis," by the same authors, was issued from the Surgeon-General's office, for the information of medical officers, in the belief that practical benefit might be derived from it.

As histories of sudden reflex paralysis from mechanical injuries, the reports therein given are thought by their writers to stand alone. Legouest, however, in the treatise already quoted, mentions some such examples;[2] and in Brown-Séquard's Lectures[3] cases are cited as mentioned by Whytt and Barthez, and one by Morgagni of a woman in whom amaurosis was instantly produced by a stroke upon the eyebrow by the beak of a cock. Still, no such complete account of these remarkable pathological conditions has been elsewhere given, and it forms a useful contribution to biology as well as to military surgery.

Such accidents as are here considered are rare; only seven cases have been distinctly recognized among all the wounds of nerves presented in the hospital devoted especially to affections of the nervous system. *Transient* reflex paralysis, from wounds on the battle-field, may, of course, often occur and be overlooked in the hurry and pressure acting upon surgeons, and which are seldom altogether over in the division or corps hospitals.

Before narrating the cases selected, this paper alludes to the various kinds of shock, commotion, &c., known to military surgeons, as well as to experimental physiologists, as occurring under powerful impressions made on the nervous system. Among the most curious of these is the sudden traumatic "hysterical" state, produced sometimes in the bravest men by the shock of a wound. An officer of well-known courage, in the Mexican war, was wounded in the heel; the nervous excitement following was such as to give him the appearance of the utmost trepidation. An apothecary, thrown down and suffering a rupture of the *membrana tympani* from an explosion of chemicals, became violently agitated as well as prostrated, with irregular action of the heart; for twenty-four hours he was unable to walk alone. The shock to the auditory nerve was supposed here to be the occasion of the disturbance of the system.

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[1] De L'Electricité Localisée.

[2] "*Nous avons vu survenir une paralysie complète de l'avant-bras et du bras, à la suite d'une saignée dans laquelle un des rameaux du nerf musculo-cutanée avait été coupé. Traité*, &c., p. 879.

[3] P. 158.

The state of "stupeur générale," as the French writers call it, following upon gunshot injuries, is, most probably, a general paralysis. Our authors then define the local affection to which they have given the most attention, thus: "When a wound occurs, and the patient surviving the first effect is found to have paralysis of a distant limb or limbs, it is impossible to deny to such cases the title of reflex paralysis." C. Handfield Jones, in the work named last at the head of this article, limits this term more narrowly; applying it only to cases in which the paralysis is of proved *irritative* origin, so as to be at once relieved by removal of the causative irritation. We cannot think, however, that this limitation is justified; even if a distinction be admitted, as it may be, pathologically, between such cases and those which the same able writer calls "paretic," being dependent upon permanent enfeeblement of nerve-centres.

Not having space for the full discussion of the very interesting cases described in the *Circular* before us, their nature may be apprehended from a statement of the main features of each.

"CASE I. Ball wound of right side of the neck, probably involving no important nerve directly; fracture of hyoid bone; wound of throat. Reflex paralysis of left arm. Probable reflex paralysis of right arm. Early recovery of left arm; partial and remote recovery of right arm."

"CASE II. Flesh wound of right thigh, without wound of any large nerve; complete paralysis of all four limbs; speedy recovery of the left arm, tardy recovery of the other limbs; subsequent analgesia of the right side."

"CASE III. Wound of right thigh, with probable commotion of right sciatic nerve; partial paralysis of right leg; reflex paralysis of right arm; speedy recovery of arm; history unfinished."

"CASE IV. Ball wound of right testicle; paralysis of right anterior tibial muscles and peroneus longus."

"CASE V. Wound by fragment of shell in external side of left thigh; paralysis of tact on a corresponding part of right thigh."

"CASE VI. Ball wound, probably involving the crural nerve. Paralysis of right arm resulting."

"CASE VII. Ball wound of deltoid muscle; sensory and slight motor paralysis of same arm."

No general law seems to be deducible from these records, as to the relation between the part injured and the nature or locality of the consequent paralysis.

Pain, of a stinging or burning kind, was an early but transient symptom in the part paralyzed, in four of the seven cases. Recovery from the reflex paralysis proceeded, rather rapidly, to a certain point; but some remainder of it was left in almost every case, even eighteen months after the injury. This is certainly curious, and very hard to explain.

But the whole theory of the mode of causation of reflex paralysis is a problem, involved, as yet, in great obscurity. All the materials before us, with the reasonings upon them, do not suffice to afford it an entirely satisfactory solution. Let us give attention for a few moments, on account of their biological as well as pathological interest, to the efforts made in this direction, by the different authors whose works are now under consideration.

Thus the subject is opened in the pamphlet of Drs. Mitchell, Morehouse, and Keen, p. 16:—

> "We have had no plausible theory of the causation of these effects, until M. Brown-Séquard attempted to account for them in a manner equally simple and ingenious. Recalling the fact that irritation of the vaso-motor nerves is capable of producing contraction of the bloodvessels, he inferred that when an external nerve is violently or permanently excited, it may be able to produce contraction of the capillary vessels of the nerve centres, and thus give rise to paralysis.
>
> "It seems unlikely, even if we admit this explanation, that the capillaries could remain contracted for any great length of time. But it is possible that the alteration of nutrition, which this temporary anæmia causes, may give rise to one of two results, either a continued disturbance of nutrition, which, however slight, would occasion grave results if it existed in a nerve centre, or secondly, to a paralysis of the capillaries of the nerve centre involved.
>
> "With so satisfactory an hypothesis before us in this modified shape, it might seem needless even to suggest any other explanation. But in a region of research so little explored, it may be allowable to point out the fact, that another mode of explanation is at least possible, and the more so, since there exist certain objections to M. Brown-Séquard's manner of viewing the subject."

It must be remarked here, that an exact presentation of Brown-Séquard's theory is hardly afforded in the paragraph above referring to it. He does not speak of an active or directly produced contraction of the *capillaries;* but expressly repudiates an hypothesis at one time proposed by Bernard, ascribing active properties to these vessels. He refers evidently, in regard to the influence of vaso-motor nerves, to the arteries; and although, by elasticity, the capillaries suffer contraction when less blood is driven through them, it is at variance with accepted histology in regard to them to speak, as our authors do, of a "*paralysis* of the capillaries."

Further, in the same paper, we have their own theory stated thus:—

> "If now we ask ourselves the question, whether it may be possible to blight or exhaust utterly the power of a nerve centre, without the intervening mechanism of contracted or dilated bloodvessels, we are tempted to think that such a result may be producible. It appears to us possible that a very severe injury of a part may be competent so to exhaust the irritability of the nerve centres, as to give rise to loss of function, which might prove more or less permanent. A strong electric current, frequently interrupted, is certainly able to cause such a result in a nerve trunk, while a general electric shock, as a stroke of lightning, is, as we well know, quite competent to destroy the irritability of every excitable tissue in the economy. While this view seems to us adequate to explain the facts, the notion of vaso-motor irritation and capillary contraction does not appear to be competent to cover *all* the facts."

Before expressing a preference for either of these views, it will be well to glance at the hypothesis implied in the term "inhibitory" nerve action, as dwelt upon in an early part of the work of C. Handfield Jones. A doctrine ascribed to Pflüger, but rather hastily indulged or adopted by some other physiologists, is, that while some nerves convey an excitant force, which always increases the action of the organ to which it passes, others have the special province of diminishing, retarding, or, when acting most strongly, arresting the functional activity of certain organs. Lister, however, believes rather that "the same afferent nerve may, according as it is operating mildly or energetically, either exalt or depress the functions of the nervous centre on which it acts." Handfield Jones uses these words:

"It is not the energetic operation of an afferent nerve that causes inhibitory action; but, its being injuriously affected by some impression made upon it. The enfeebled state of the nerve itself, or of the centre to which it proceeds, or the severity or malignity of the impression, may give rise to the familiar effect." He gives, as an example, a case in which the external rectus muscle of the eye was paralyzed during the existence of a whitlow on the thumb; the paralysis and consequent squint disappearing after a piece of dead bone was removed from the diseased phalanx. Lawrence is quoted as relating a case in which the extraction of a carious tooth, with a splinter of wood projecting from one of its fangs, procured the restoration of the sight of the eye on the same side, which had been entirely lost for thirteen months. This is called by Dr. Jones "inhibitory action." Certainly with equal propriety it may be called reflex paralysis. The terms merely indicate diversity of theories, not difference in the facts.

Many other examples of this kind of action are to be found among the experiments of biologists;—as, when Bernard ascertained that irritation of the posterior roots of spinal nerves suddenly checks the cardiac motions for a time, while irritation of the anterior roots has no such effect; or, as Wilson Philip long ago proved, sudden crushing of the brain or destruction of the spinal cord arrests the arterial circulation more abruptly than does excision of the heart. In all such cases, of course, it is no speciality of functional relation, but the morbid character or extreme violence of the disturbing cause, that explains the "inhibition."

Briefly, Brown-Séquard's theory in regard to reflex paralysis is, that it is produced by *anæmia of nerve centres* due to *contraction* of the bloodvessels supplying it; this contraction having its origin in peripheral nervous *irritation*. Against this, Handfield Jones argues (*Clinical Observations, &c.*, p. 14) not very differently from Drs. Mitchell, Morehouse, and Keen; urging 1st, that it is difficult to suppose a spasm of reflex origin to be limited to such a very small extent of vessels as would be sometimes involved, as in palsy of one of the sixth nerves or ptosis of one eye. 2d, that it is almost impossible to believe that a contraction of vessels should be so persistent as the hypothesis requires. 3d, that Gull found irritation of the renal nerves not to cause contraction of the vessels of the spinal cord, nor paralysis of the lower limbs, as Brown-Séquard stated in explanation of paraplegia from renal disease.

These objections appear to us to be extremely well sustained. There is, as Dr. Mitchell avers, no experiment upon record to show that fixed contraction of bloodvessels can be made to continue for a length of time; nor any to prove that it occurs at all in any nerve-centre. To the contrary of the first of these hypothetical possibilities, we have the careful experiments of Wharton Jones;[1] in which, even under *direct* excitation, by electrical or other stimuli, the vessels were found, after contraction, to dilate either to or beyond their normal width. On this whole subject there is an amount of haziness in the reasoning of most writers, which, it must be admitted, does no great credit to biologists, and proves that able experimenters may sometimes fail to do complete justice to the solution of problems evolved by their own procedures. Let us illustrate this by an example bearing directly upon our present topic.

Brown-Séquard asserts the following summary proposition:[2] "The effects of excitation of the vaso-motor nerves consist essentially in a contraction of bloodvessels, which is followed by a diminution of the quantity of blood, in the temperature, and in the activity of nutrition. The effect of interruption of continuity of the vaso-motor nerves (*i. e.*, their paralysis) consists essentially in a paralytic dilatation of bloodvessels, which is followed by a greater afflux of blood, an increase of temperature, and a greater activity of nutrition."

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[1] Guy's Hospital Reports, 1851.

[2] Lectures, &c., p. 205, Prop. 12th.

Now this statement meets at once with important difficulties. Bernard showed[1] that, when certain nerves are excited, the bloodvessels of the salivary glands become *enlarged;* an increase in the secretion of saliva occurring also; and, a stimulation of the uterus, of the skin over the mamma, or of the mucous lining of the vagina, may produce a secretion of milk. Menstruation, too, has repeatedly been brought on by excitation of the mammæ by warm poultices. Brown-Séquard himself calls attention to these facts[2] as samples of reflex secretion. They cannot, however, be set down as examples of vaso-motor paralysis, reflex or otherwise. This explanation is boldly enough assumed by both Brown-Sequard[3] and Handfield Jones[4] for the familiar ophthalmic and sometimes facial congestion following the presence of a foreign body in contact with the conjunctiva. The former of these writers admits fully that many cases of reflex secretion require some other postulate. That which he assumes is based upon the theory so ably developed by Draper, of the "normal attraction of the living tissues for arterial blood;" it supposes that nervous excitation, sometimes, instead of producing fixed contraction by acting upon the *walls* of the vessels, may pass them altogether, and act upon the nutritive changes in the *tissues* so as to increase these changes, and thus draw more blood into the arteries, by the altered "suction-power" of the capillaries. Bernard was driven to a yet more clearly unphysiological conjecture;[5] that the *capillaries* may have two properties, one of contraction, and the other of dilatation; and that the first of these is put into play by one set of nerves, and the other by another set.

Why should either of these almost self-contradicting hypotheses be thought necessary? Are they not ingenious but inefficient modes of escaping the simple view, as to the arterial activity and its relations, propounded long ago by Unzer, but which has had only one decided advocate[6] since Sir Charles Bell? According to this view, the contractility of the arteries being, under normal excitation, as *rhythmic as that of the heart, only abnormal* irritation produces tonic contraction of the vessels, seldom or never permanent; while *paralysis* of the arteries, inducing their passive dilatation and blood accumulation (not active afflux) may follow either from the section of vaso-motor nerves, as in Bernard's division of the cervical sympathetic, or from an exhaustive or suppressive disturbance of vaso-motor nerve centres; and, at the same time, neither of these, nor any other mode of agency involving the bloodvessels primarily or especially, can account for reflex paralysis. Adopting this view, an argument in favour of which would be in this place obtrusive, we are driven to the conclusion stated, in different terms, by Dr. C. Handfield Jones, and by Drs. Mitchell, Morehouse, and Keen; that reflex paralysis or inhibitory action is caused by a morbid impression upon a nerve-centre, diminishing, if not exhausting its motor or sensory capacity, as a *neural* function, without any necessary reference to the condition of its bloodvessels. We cannot but be satisfied that this will be the finally accepted judgment of physiologists.

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[1] Journal de la Physiologie de l'homme, Oct. 1858.

[2] Lectures, &c., p. 155.

[3] Lectures, &c., p. 170.

[4] Clinical Observations, &c., p. 13.

[5] Journal de Physiologie, cited by Brown-Séquard, Lectures, &c., p. 149.

[6] Transactions of American Medical Association, 1856, pp. 781-837.

Very much more must be done, however, if not by biological experiment, at all events by close pathological observation, to elucidate this complex subject. Great credit is due to the medical officers who have carefully collated and ably analyzed facts having so great scientific as well as practical importance; and it may be hoped that their opportunities and labours will meet with further extension in the same direction, unless, indeed, this be prevented by the ever wished for cessation of the supply of material from the victims of war. H. H.

ART. XVII.—*Die Krankhaften Geschwülste. Dreiszig Vorlesungen gehalten während des Winter-Semesters* 1862–1863 *an der Universität zu Berlin.* Von RUDOLF VIRCHOW, ord. öff Professor der Pathologischen Anatomie, der Allgemeinen Pathologie und Therapie, etc. etc. Erster Band, mit 107 Holzschnitten und einem Titelkupfer. 8vo. pp. 543. Berlin: Hirschwald, 1863.

Morbid Tumors. Thirty Lectures delivered during the Winter Term of 1862–63 *at the University of Berlin.* By RUDOLF VIRCHOW, Professor of Pathological Anatomy, etc. etc. Vol. I. With 107 Woodcuts and a Frontispiece on Copper. 8vo. pp. 543. Berlin: Hirschwald, 1863.

THE learned Professor of the Berlin School thus comes before the public in another work, rich with the fruits of his own investigations, and full of that astuteness and logical simplicity in his deductions, which are characteristic of his gifted mind. We may well be glad that the walls of his lecture-room have been thus expanded so as to include even the far-off corners of the earth. Those of us who have enjoyed the opportunity of listening to his silvery utterances, will not fail to hear them ringing in our ears, as we peruse these pages, and will appreciate the force of that remark in the author's preface, where he says, it would be impossible to reproduce all the illustrations which were presented to his class. We can well imagine the hundreds of crayon sketches which were dashed off upon the blackboard with the readiness and skill of artistic genius. The work forms the first part of the second volume of *Lectures on Pathology;* those on Cellular Pathology forming the first volume. Like the latter, the present series are stenographic reports from the speaker's mouth, revised by him, and altered somewhat so as to adapt them to the press. The multitude of duties, both of a scientific and political character, banished from the Professor's mind all hope of producing any original work during that winter, save in this method. The present subject was chosen, partly because the author had devoted much reading and observation to it, partly because it was one in which the literature of our profession was, as it seemed to him, lamentably deficient, and partly because the views promulgated were, in his opinion, unsound. Differing from the humoral pathologists, he takes his stand upon his own ground of cellular development, works out the classification of tumours from a genetic stand-point, from the tissues in which they have had their origin, and traces their development in accordance with the analogy of other well-known and established pathological processes. Throughout the work the remarkable erudition of the author is made apparent, and in no case are conflicting views kept out of sight; they are, rather, clearly exposed and ably combated. We propose to give the reader a brief *résumé* of the work.

The first lecture is devoted to defining what is to be included under the head of tumours, and to indicating what principles should govern their classification. The limits within which we should apply the term tumour are not placed by the nature of things, but merely by practical necessity. Scarcely any one would class under the head of tumours the actual *tumour inflammatorius.* Hydrocele is reckoned among tumours not from its own nature, for then hydrothorax might as well be added, but because at times the diagnosis may not be clear; it may be uncertain whether there is an actual tumour, *e. g.*, a sarcocele, or whether there is merely an hydrocele. On the other hand, carbuncle, anthrax, and abscess are excluded, because there is no difficulty in the diagnosis. The practical value of the designation is to include those things alone in which there is danger of an error in diagnosis.

Nor can we substitute, as some have done, the word *pseudoplasm* for tumour, for that implies a distinct genetic point of view, which is not applicable, *e. g.*, to hydrocele, nor to many of the cystic formations. The foundation of every system of classification of tumours, be it ever so contracted or ever so comprehensive, must be genetic. The first and most important question is, what is the origin of the tumour? Formerly attention was directed to the coarser anatomical character of a tumour, to its being malignant or non-malignant, to its appearance and external form, and its consistency or degree of resistance was considered a point of the utmost importance. Hence arose the names cancer, nodule, tubercle, polyp, fungus, &c. But the form has no necessary relation to the internal structure of the tumour. To be sure some tumours regularly assume a given form, as, for instance, the cauliflower excrescence (*tumour cauliflorus*), but this is merely a subdivision of warts or of cancroid tumours, for which subdivisions the descriptive name applies very properly. So names have been given which refer to the consistency of tumours, as hygroma, meliceris, colloid, and atheroma. These terms are still employed, but now we know how the contents of these tumours are produced, of what composed, how the tumour as a whole exists. We do not now designate as atheroma every tumour which has a pultaceous feeling, for the contents of some cancerous and cancroid tumours have, at certain stages of their development, an atheromatous character. This separation of things apparently similar, but in their existence and significance vastly different, is a severe task. To say that this is a scirrhus and that a steatoma does not decide the nature of the tumour. Formerly a scirrhus was something by itself, and a colloid tumour something by itself, but now we have a scirrhous cancer and a colloid cancer. A great step forward was made when pathologists became convinced that certain tumours resembled certain parts of the body; hence came the term fatty tumours. Abernethy went still farther, and recognized tumours which resembled the more complicated structures of the body, and spoke of a pancreas-like tumour. But all these attempts led to no permanent result, because the basis of an exact knowledge of histology and embryology was wanting. Neither the study of the tissues, according to Bichat, nor the embryology of John Hunter and Haller sufficed to establish a classification. It was only by the labours of Swann and Johann Müller that the finer anatomy of the tissues and of tumours became the subject of scientific investigation. We can now, by following the path which they indicated, present an almost complete classification founded upon an anatomical genetic basis.

In the next lecture upon homology and heterology, in the domain of tumours, the author establishes the fact that a tumour cannot exist in the body as an independent thing. It is a part of the body, not merely connected with it, but proceeding from it, and subject to the same laws. Every kind of formation in tumours, whatever it may be, actually agrees with known typical forms in the body, and the real difference between various tumours rests upon this principle, viz.: tissues, which are in themselves normal, appear in the form of tumours, sometimes in parts to which they actually belong, and sometimes where they are abnormal; the first is homology, the second heterology. Still farther, the same kind of tumour may be at one time homologous, at another heterologous, according to the tissue from which it proceeded. Thus, a cartilaginous tumour on the cartilages of the ribs is homologous, because cartilage existed there previously; but when the same tumour is found in the testis it is heterologous.

This division has also a practical value, for, in general terms, homologous tumours are benign, heterologous, malignant. But not all heterologous formations are alike malignant; there exists, as it were, a certain scale of malignancy, the lowest degrees of which are all but benign. With such a division we have, on the one side, those formations from which no uncommonly injurious effect upon the body will be anticipated, upon the other, are those which might even cause suspicion. And thus we have a foundation for the classification of tumours from an anatomical genetic point of view, carrying with it a physiological significance and a practical value.

The general physiology of tumours is next considered. As for the etiology and genesis of tumours there are three points to be considered, the exciting local cause, predisposition of the part, and dyscrasia. The latter is regarded by the author as a deuteropathic phenomenon; not that the original tendency is in the blood, but that there is an absorption, a taking up of material from a tumour already existing. The original tumour is an infecting mass, and hence the frequent reproductions after surgical operations; the tissues have imbibed the infection, and the operation is not performed in sound tissue. The tissue was *apparently* sound, but the line of infection is not discernible. So when the same formation is observed in other parts after an operation. It is a much more scientific method, and one borne out by facts, to suppose that the disease was already present at those points, but not in the amount to attract our attention. Neither the recurrence of tumours at the point of operation, nor the appearance of similar tumours in distant organs, or, as it has been latterly termed, generalization, are to be considered as phenomena, independent of the original tumour, as the working out of a dyscrasia in these parts. In the vicinity of the original mass new accessory masses are constantly formed, and that which we have at last, is a multiple of these smaller masses. The original *mother nodule* grows to a certain size and stops; in the meantime, in its vicinity, a new zone of these small masses is formed, and these at last touch each other and the original mass; then a new zone is again formed and so on. From the original nodule a given irritation is conveyed to the vicinity, and these parts are subjected to a diseased action similar to that which affected the original point. The accessory nodules proceed from the growth of the cell elements of the surrounding parts. The irritation is caused by fluids produced in the mother nodule and passing into the tissues by imbibition. Certain inflammatory processes extend in the same manner. In erysipelas and in the *plaques muqueuses*, just as in scirrhus there is an original infecting substance, generated at the original point of departure, and carried onward partly by simple exosmosis, partly by the lymphatics, to the nearest lymphatic gland. But sometimes morphological forms—cell elements—are set in motion, and the lymph vessels themselves have been found filled with the products of a tumour. So is it also with the veins. The author admits, therefore, as a possibility, that portions of tissue may be detached and carried forward, and may become new sources of disease. Probably both forms of contagion occur, but the purely humoral is the most important.

The etiology of neoplastic tumours is then considered. As the theory of a dyscrasia is less satisfactory than that of secondary infection in the explanation of the extension of the tumour, so does it also fail to account for the original point of departure. Cachexia is often the result rather than the cause. The state of the fluid elements is by no means unimportant; but there is a wide difference in regarding these circumstances of dyscrasia, these disturbances of nutrition as the predisposing, or as the essential cause. The neuro-pathologic origin of tumours, as advanced by Van der Kölk, is disputed by the author. Finding neither in the blood nor in the nerves the origin of tumours, we are led back to the tissues. Here an important fact is the local disposition, and under this comes hereditary character. Some tumours, *e. g.*, nævi, are congenital, but the more important classes are those in which the disease is indeed inherited, but first developed in the later periods of life. Points which have been previously the seat of actual disease may in the later periods of life be the seat of a tumour, as when a cheloid tumour is seated upon the spot of a scar. In mucous membranes too, tumours are generally seated on points which have been previously subject to inflammation. Again they may arise in parts particularly exposed, whether from position, arrangement, or function, to injuries or disturbing causes. Thus, when the testicle does not descend, but lies between the structures of the abdominal wall, it is much more frequently the seat of malignant tumours, than when it is retained in the abdominal cavity. To the local predisposition, therefore, the greatest importance is to be attached, and this importance is still increased when a part has been deprived of its regulatory capacities, and when, at the same time, the general condition of the body is unfavourable. This becomes still more evident in proportion as it is shown that certain organs are particularly disposed to certain diseases.

For all tumours there is a certain point of predilection. Tumours which are common in certain organs, are never found in others. Opposed to this predilection there is also a certain immunity. These remarks apply to the original tumour, upon which the secondary tumour is more or less dependent. We may almost say that those organs which are inclined to protopathic formations are seldom the seat of metastatic tumours, and *vice versâ*. The author is led to the conclusion that, even in malignant tumours, the mother-nodule does not proceed from a dyscrasia; at all events it must be a dyscrasia altogether different from that which calls forth the metastatic nodule. Mere multiplicity must not be confounded with metastasis; the former is merely an extension of the local disposition. When this is extended over large portions of the body it may be designated constitutional diathesis. Even in cases where there is a specific dyscrasia, as in syphilis, we must come back to the local causes, whether occasional or predisposing, in order to determine why this organ, and not that, is attacked.

The fifth lecture is upon the pathogenesis of neoplastic tumours. Little attention has been paid to the consideration how tumours exist; how the same tumour, from the locality or the peculiar circumstances under which it is formed, may assume various forms, offering varieties, as it were, varieties so marked that we almost think them another sort of tumour. A tumour must be considered as always in process of development; even when it has reached its acme, it does not remain stationary; beyond this acme new alterations occur. Tumours, for the most part, originate in active processes, whether of increased secretion, or exudation, or of actual formation, processes, in fact, which must be regarded as irritative. Hence, the stadium of *irritation* is the first we would notice. This irritant may arise from external or internal sources. The nature of the irritant differs according as it is chemical, as we suppose it to be in dyscrasia, or mechanical. The direction in which the development of the new tissue occurs differs, on the one hand, as the tissues themselves are different upon which the irritant acts, and on the other, as the acting substance may have a particular chemical effect, giving peculiar qualities to the irritated tissue, just as the ovum is acted upon by the seminal fluid. We know that there is in tumours a defined mother tissue, a matrix, from which, by proliferation, the tumour exists. The elements of these tissues expand and appropriate more material; nucleation, or division of the nuclei succeeds, followed by an increase of cells.

If this proceeds rapidly, and if the cells diminish in size in proportion as they increase in number, a second stadium is reached, which the author terms *granulation*. In this stage the tissue is, as it were, indifferent; the cells are generally small and round, at the most having a nucleolus and granular contents; these are the formation cells, and have proceeded from the previous elements of the part. Sometimes, however, this course is not pursued, and the division of the elements leads directly to typical forms, as in direct hyperplastic formations. But these developments are more frequent in the more indifferent tissues. The actual connective tissue is, however, the most frequent point of departure for the tumour. Between the matrix and the tumour there is no exact boundary. Judging by the consistency of the part, the vascular condition, and the chemical character of the tissues, we think we discover the boundary line, and say this is tissue, that is tumour. But if we look beyond this point, in the apparently healthy tissue, we find the rows of the last produced proliferating cells; and hence it is that so frequent recurrences *in loco* follow extirpation.

After this stage of granulation comes the point of *differentiation*, when not merely one tissue develops one tumour, and a second tissue another, but when, in the same tumour, one part develops one tissue, and another part a different tissue. There are tumours with an entirely simple and uniform character of tissue; one part may be older, another more recent, one thicker, another thinner; but the tumour actually consists throughout of one and the same tissue. These the author calls *gewebsartige* (tissue-like) histoid tumours. In another group the formative cells develop in different ways, as into connective tissue and epithelium; alveoli may be formed, vessels may become developed, and thus a complex formation is established, resembling the organs of the body. These are called organoid tumors. But this manifold variety of forms in the tumour may be still farther increased, and the tumour may come to resemble a collection of organs, a system of the body, as, for instance, the skin. There may be not merely the correlatives of the connective tissue, and of the epidermis, but also of the glands, as of the sweat and sebaceous glands, and even of the hairs, and all the other parts pertaining to the skin. These forms the author designates as teratoid.

When the tumour has reached this point of the formation of characteristic tissues, it has arrived at the *stadium florescentiæ*, the fourth stadium, in which its elements have reached their typical acme. But how are we to recognize this typical acme of development? There are two methods; the first, though often uncertain and indecisive, is by the agreement of the elements with known typical and perfectly developed elements of the body; the second and more certain is when we can perceive from the further course of the tumour that the elements, after having reached a certain height undergo no subsequent development. But here a distinction exists between the simple histoid tumours and even individual parts of the more complicated tumours; for the latter have a transitory character, a short existence, while the former acquires a more lasting character, and its products may become incorporated as permanent components of the body. Hence, we obtain a practical fact of great value. The more permanent are the elements of the tumour, the more readily may it become a permanent part of the body. An individual may carry such a tumour his whole life long. But as the elements of the tumour are more destructible, and have but a short life, so much the more certain is it that the tumour cannot become a permanent part of the body; that, at least, the old portions of the tumour cannot continue; new outgrowths may give it this appearance, but it is appearance only.

The tumours consisting of perishable elements differ again in the relative duration of these elements. From the first there is a tendency to destruction. In the interior of such a tumour there is a perpetual destruction, a perpetual dissolution, a perpetual retrogression; and this is the sixth and last stadium, viz., that of *retrogression*. Under this are classed the processes of fatty metamorphosis, softening, induration, and calcification. This course of development, through these successive stadia, the author has established for cancer, colloid tumour of the ovary, enchondroma, cholesteatoma and many others.

The sixth lecture lays the foundation for a systematic arrangement of tumours. The author excludes, to begin with, all simple tumefaction of merely an inflammatory character, whether as hypertrophy or as hyperplasia; so also unproductive cysts, as those found in the brain and called apoplectic cysts, and those formed by the cysticercus, &c. Tumours are divided into two general classes—those which do not exist by any individual growth of their own, and those which do. The former comprise cystic tumours, the latter the pseudoplasms or growths. The former may arise in various ways; they may proceed directly from the blood, or from the accumulation of material secreted in a peculiar manner. Those which proceed from the blood may be of three varieties: 1st, blood in substance or *extravasations;* 2d, exosmosis of the watery, saline, and albuminous elements or *transudations;* 3d, the addition of a certain amount of fibrin not from the blood, but, as the author thinks, from the tissues, and constituting *exsudations.* These may, however, appear under complicated forms, and we may have a hemorrhagic or a serous exsudation.

Again, we may have tumours in which there is a deposit of materials, the nature of which is determined by the character of the surface from which they proceed. The secreted material may be in some chiefly fluid, in others chiefly organized matter, and in others still a mixture of the two. As an example of these last respectively, the author cites a cyst filled with pure mucus, a cyst filled with cells cast off from a normally secreting surface, as the epidermis, and lastly, one filled with cells cast off from a gland and mingled with the watery substance. Thus these cysts form a class by themselves, designated as tumours caused by *dilatation* or *retention* from the fact that the fluids and organized parts accumulate in a previously existing space. Of the two classes already mentioned, leaving out of consideration the entozoa and the simple tumefactions, it is the exsudation and extravasation tumour which approximates the most closely to known pathological processes. Then come the dilatation and retention tumours.

To these is added the third and last group, viz., the actual pseudoplasms or neoplasms, originating from *proliferation*, growths in the most strict sense of the word. Of these we have already spoken, subdividing them into histoid, organoid, and teratoid tumours. But our classification is not yet complete, for we must add still another division, viz., that of *combination* tumours, in which not merely the different proliferation tumours may be combined, but in which these forms may be combined with exsudation and extravasation forms, with dilatation, and in part with newly formed sacculi. These latter combinations may exist in two ways, either the cyst exists first and the neoplasm originates from its walls, or the neoplasm is first present and produces dilatation; possibly still other tumours may be developed in the cysts thus formed, as in cysto-sarcoma. This separation of two apparently similar forms is of the utmost importance, for the one variety is quite innocent and purely local, while the other is of the utmost gravity and malignancy.

We have thus a complete classification from an anatomical genetic point of view. It must not be supposed, however, that all tumours can at once be ranked in one or the other of these classes; that we can at once say which are innocent, and which malignant. The proliferation tumours must be again considered as to their homology or heterology in the author's sense of those terms. In general terms homologous forms, however important they may be by their position, size, connections, and influence, are still innocent formations; among these the retention and exsudation forms belong. Everything else is at the least suspicious. Every heterologous formation is not, however, malignant. As we have said there is a scale of malignancy, and consequently of heterology. When, therefore, a cartilaginous or osseous tumour exists in the connective tissue, or when a mucous tumour occurs in the adipose tissue, they are by no means so heterologous as an epidermoid tumour in the connective tissues, or as a tumour composed of cylinder epithelium in a lymphatic gland. To be sure a cartilaginous tumour in the connective tissue or in bone substance is heterologous, but by no means as much so as an epithelial or a muscular formation would be in the same place. Still more important, however, is the relative proportion in which the tumours create fluid material. Herein lie the worst characteristics, and the greater capacities for infection—the *virulence* of the tumour. The more poorly supplied a tumour is with vessels, the more will it infect the immediate vicinity only; but the richer it is in bloodvessels and lymphatics, the more blood and lymph passes through it, the more the blood is brought in contact with its parenchymatous fluid, so much the more easily will the infection become general. This, the author admits, is his own interpretation, but it is borne out, he says, by his experience.

We have thus laid before our readers, more in detail, what we consider as the most important part of this valuable work. Here the author's acumen and genius are fully developed; every page is rich in material for earnest thought and full of instruction, bearing in every line the impress of the author's gifted mind. Of the rest of the volume we can take but the most cursory glance, contenting ourselves with the more full elucidation we have given to the principles which underlie the whole. The author proceeds to the consideration of the various classes of tumours, and, first, the—

Extravasation forms—sanguineous tumours, or hæmatoma. These are of three forms: 1st. The cystic. These may arise traumatically or mechanically from an internal solution of continuity. They are exemplified in *neonati* upon the head; in adults, upon the ear, upon the dura mater, in the dissecting aneurism, and in the extravasation following the rupture of a muscle. 2d. The forms without cysts, and where the blood seems to form a firm nodule, as upon the valves of the heart, or where the blood is more equably distributed through the parenchyma of the organ, giving it the appearance of a sponge saturated with blood, as in the ovary, and as in the thrombus vulvæ of parturition. 3d. The polypoid form, as the polypoid hæmatoma of the uterus, and the hæmatocele uterina, or hæmatoma retro-uterina, where the blood is collected in Douglass's sac.

Then the author takes up the second class—the transudative and exsudative tumours—hygroma, serous tumours; and as a type presents hydrocele. A hemorrhagic character may be added, and the hydrocele may be merged into a hæmatocele. At the same time there may be hyperplastic thickening, sclerosis, in short, at the surface. Adhesions may be formed, synechiæ, and with the hydrocele there may be partial obliteration of the tunica vaginalis. If the sclerosed tunic becomes very much thickened, and remains so for a long time, we may find calcification of the tissues as in the pericardium. Or we may find upon the surface of this tunic a partial proliferation, manifested by abnormal outgrowths; the pedicle of these last may become detached, and we have the free bodies of the tunica vaginalis described by Sir Astley Cooper. All these conditions are the results of irritation, and belong partly to the secondary and partly to the formative groups of the phenomena of irritation; the more the formative element predominates, the nearer does the tumour approach the neoplastic forms. These various conditions of the tunica vaginalis must be kept in mind, both in forming the prognosis and in the treatment. If this membrane is in a cartilaginous condition, or is tending to that condition, its tissue is but poorly supplied with vessels, hence there will be but slight tendency to the existence of adhesive processes. Therefore, if, as is commonly the case, the fluid is evacuated and iodine injected, a more determined inflammatory process is induced, combined with softening, and the formation of pus upon the surface. In such a case it is almost impossible to pursue a course of treatment which shall result in a cure; and hence removal of the part is the indication, because its condition cannot be improved, it is useless in itself, and it causes great discomfort to the patient by its vulnerability.

Hydrocele of the neck and back are then considered. In speaking of the tumour of spina bifida, the author remarks that the sac frequently has an external depression, which is sometimes funnel-shaped; when the sac is laid open, this depression is found to correspond with the insertion of the end of the medulla spinalis. The principal part of the serous deposit lies within the arachnoid around the spinal marrow and the roots of the nerves; it is only occasionally that closed serous sacs are found at the same time in the dura mater. It is of the utmost importance in the history of spina bifida and hydrocele cerebri, to know whether we have to do merely with the membranes of the spinal cord and of the brain, or whether the nerve centres are at the same time involved. With the first we may hope to bring back the normal condition by an evacuation of the fluid, while in the second we can only anticipate the most severe injury. But aside from the treatment, there is the greatest difference in the symptoms. Spina bifida, when combined with hydrorachis interna and especially with atrophy or solution of continuity of the medulla spinalis, brings with it of course incurable paralysis, while the simple hydrorachis externa produces merely local disturbances, or perhaps no apparent results. The latter is the case when the tumour is perpetually covered by the skin and the other soft parts. Some forms of this class of tumours may be carried even to a late old age without injury. Of course the most favourable location is where there are the fewest nerve bundles, *i. e.*, the sacral region. The author cites one case in a woman 23 years old, in which the tumour was as large as a child's head, and had been frequently punctured. All forms of spina bifida between the sacrum and the termination of the spinal cord belong to this more favourable category; the higher the sac occurs the more grave is it; and in the cervical and dorsal regions we are almost sure to find not merely the membranes, but also the nerve centres affected; or, to use the author's terms, we have not simply a hydro-meningocele, but a hydro-myelocele.

Passing to the consideration of the tumours of the next class, the retention tumours, he recognizes as their distinguishing feature an individual secretion, which is not merely an exosmosis from the blood, but rather a product of the activity of the tissues; and this secretion constitutes the accumulation. Either it is secreted by the walls of the sac, and then it is merely a local phenomenon; or it is secreted at a point removed, and is not expelled from the given system, as in the case of glandular secretions, which are retained in the emunctory canals. In general the open spaces which already exist are the seat of the accumulation, and these are usually canals, the tumour acquiring its cystic character from a dilatation of the walls of the canal. If a perfectly closed cyst has thus been developed from the walls of a canal, there must have been an adhesive process, an obliteration, and this presupposes an inflammatory or at least an irritative character in the local process. The character of the contents of these cysts is very various and uncertain. The original secretions themselves become altered, and new products are added whether of a secretory or of a transudatory or hemorrhagic character, and thus the original character is entirely lost. Hence it is necessary to recognize various stages in their formation, and it is only in the initial stadium that their specific secretions exist in their purity.

Follicular cysts or atheroma are first considered. As a rule it is the hair-follicle which is the seat of the retention; the lesser accumulations constitute what we call comedones, the larger forms constituting atheroma in the more ordinary use of the word. In all the larger atheroma there is a pericyst or a membrane of cellular tissue, and within this, the layers of epidermis are accumulated somewhat like the layers of an onion: the internal layers of epidermis are always the earliest, the external the last cast off. Another aid to their growth is found in the new sebum, which is furnished. Of a corresponding nature are the mucous cysts or hydatids of the mucous membranes; and these are found in all the forms corresponding to the atheroma. It is their chronic form which we recognize as polypi. We sometimes find upon the female sexual organs all the various forms combined; nowhere is the cystic polyp more common.

We pass to the third division, the proliferation tumours, the consideration of which the author commences in the thirteenth lecture. The proliferation tumours, growths, neoplasms, are distinguished from those hitherto considered by the fact that the development of a new tissue in them is no product of a later period, no accident complicating the formation or perfecting it, but that this new tissue constitutes from the commencement the tumour—it is the tumour. Whatever other alterations may occur, and give rise to hemorrhage, exsudation, or retention, or to the formation of cysts in and approximating to the tumour, are in relation to the neoplasm secondary and accidental; for the neoplasm proceeds from the old tissues, and they serve as matrices. Thus we have to consider a large number of processes, all of which have in themselves, undoubtedly, an active, productive, irritative character, and which extend from the simplest inflammatory forms to those most clearly marked as heterologous and malignant. But this great domain can be divided into groups, as we have hinted above, according as the growth is more simple or more complicated in its structure; as it is composed of a single tissue or of a combination of various tissues. The difficulties attending a division are, however, apparent when we remember that the vast majority of the proliferation tumours proceed from the connective tissue scattered throughout the body, to which, in addition to the actual connective tissue, we also trace cartilage, bone, fat, marrow, and still other tissues.

The author commences with the fibrous tumours, *fibroma*, rejecting the name fibroid. He excludes from this group the so-called fibroid tumours of the uterus, because these have been found to contain muscular fibres; so also he excludes the nodules occurring in the nerves, the so-called neuroma. Fibroma appears, in general terms, in three forms: 1st, in the more diffuse form of elephantiasis and its allies; 2d, in the more limited nodular, tuberose form, or, as the dermatologists say, tuberculosis; 3d, in the form of papillary outgrowths. The reader will find the author's exposition of elephantiasis (arabica) exceedingly clear and instructive; we have never met with a more satisfactory treatment of that whole subject. Allied to the first group is the fibroma mammæ diffusum, the induratio benigna, as it was termed by the older surgeons. Among the papillary forms are included the broad and pointed condyloma, as also the condyloma subcutanea, or follicular condyloma. The fibroma shows a special tendency to form combinations with other tumours; in particular the limitations of the tuberous form are not well distinguished from sarcoma; indeed, there are many transition forms, and the limit will depend very much upon the observer's own will. Among these latter may be reckoned the degeneration of the fibroma, and in this way the fibroma may become secondarily cancerous, cartilaginous, cystiform, &c. The tuberous form may have its seat in the skin and subcutaneous tissue, as it does in elephantiasis, molluscum, and the papillary forms; or it may be in the fasciæ, and it here may be either unilocular or multilocular; here, too, besides the simple form of fibroma, we may have the fibroma mucosum, or the ossifying or petrifying fibroma. The fibroma may be seated also in the periosteum. In the worst forms we may be uncertain whether the seat is in the fascia or in the periosteum; and as an instance of these we have the retro-pharyngeal tumour and the naso-pharyngeal polyp. In other portions of the body the tuberous forms do not occur, or at least only in such isolated and diminutive forms that they may be considered as belonging almost to the papillary form. This is true of the fibrous polyp of the larynx, which has its seat upon the thicker portion of the vocal chords. All these forms are hyperplastic, entirely homologous. The fibroma have only a local signification, and are to be considered as benign. However much they may extend, they have no tendency to ulcerate, and still less to infect. Indeed, many assume spontaneously a retrograde action, undergoing gradual atrophy and resorption. There are also heteroplastic forms; not, however, in the sense of malignancy, but of a development, producing a type different from that of the matrix-tissue. This form is most common in the bones, proceeding either from the osseous tissue itself or from the marrow; but the most marked cases of heteroplastic fibroma afford a favourable prognosis, when completely extirpated.

The second class of proliferation tumours are the *lipoma* or fatty tumours. They consist of the actual *tela adiposa;* the cells of the tumour, however, are larger than those of the adjoining adipose tissue, and show an irritative origin. Every lipoma has a lobulated structure, and each lobulus is surrounded with a vascular capsule of connective tissue. In certain tissues we find that the cells of the connective tissue have a special predisposition to the appropriation of fat; such are the sub-serous, sub-synovial, and sub-mucous tissues, and so also the interstitial tissue of the muscles. The lipoma are hyperplastic or heteroplastic; as an instance of the latter, we have the fat nodules in the kidney. The multiplicity of lipoma, with which we meet is an entirely different thing from the multiplicity we find in malignant tumours and in an infectious dyscrasia. Here it merely shows the presence of an irritant in the adipose tissue, which is not equally distributed throughout. Every lipoma must have a local cause, though this may be obscured by predisposition, and this last may be either congenital or acquired. The lipoma may exist through a whole lifetime, or it may undergo spontaneous retrogression, induration, or calcification, and the latter may be in an amorphous manner, or more like bone. It may also terminate in ulceration, and this may take on a septic character, but it never passes into a malignant form; those which are considered such are doubtless no pure lipoma, but combination tumours. Sometimes the lipoma may form an abscess.

The next group of proliferation tumours are those proceeding from the mucous tissue, the tumores muscosi, or *myxoma.* These are to be distinguished from mucous cysts, in which the mucus, as a secretion, forms the tumour. Here the mucus is an element of the tissue; it belongs to the intercellular substance of a tissue, which from its relative structure is included in the great class of connective tissues. It may be called an immature adipose tissue, inasmuch as it afterwards is transformed into the latter, either by its cells taking up fat, or by their first enlarging, and ultimately forming fat lobes. On the other hand adipose tissue may degenerate into mucous tissue. The two tissues are parallel conditions of one and the same tissue. The mucous tumours are both hyperplastic, and heteroplastic, homologous, and heterologous, but they are all distinguished by great elasticity and softness; they may even exhibit fluctuation, and when cut they have a jelly-like consistency, sometimes more solid, often almost liquid; the cut surfaces when pressed give out a glutinous tenacious fluid, like the white of an egg, or mucus. Besides this fluid, which is intercellular, there is a fibrous basement structure. The tumours commonly called colloid, most probably, belong to this category. Paget names them fibro-cellular. They are most common in fœtal life, and a typical form is seen in the mola hydatidosa of the placenta. They do not occur very commonly in adults, and when they do it is upon places where there was a large deposit of fat, where the connective tissue was of a spongy character. They may be subcutaneous or intra-muscular. They occur upon the thigh, in a polypoid form upon the breast and the vulvæ of women, in the hilus of the kidney, and in bones; in the latter they proceed generally from the marrow. These forms of myxoma are hyperplastic, but the heteroplastic are the most common, and under the latter belong a large number of tumours of the brain and of the nerve-centres. Many tumours described as cystic neuroma belong here. Still more heteroplastic are the forms occurring in the breast of women. As for the significance of myxoma, the hyperplastic forms are of a more local character, and an operation removes the evil. The limits, however, between the two forms are very difficult to determine, and the intra-muscular forms are in this disputable category. The heteroplastic forms have a great tendency to extend and to recur.

The closing lecture of this volume is devoted to the *chondroma* or cartilaginous tumours. These are divided primarily into the ecchondroses or the hyperplastic forms, and the enchondroma or the heteroplastic, heterologous forms, although the latter do sometimes arise from cartilage substance. The first group proceeds from the permanent cartilages. When the second proceeds from cartilage it is from a transition cartilage, which was not transferred into bone at the proper time. The ecchondroses: these are found most frequently upon the cartilages of the ribs, then, next in order upon the synchondroses, as of the symphysis pubis, and then upon the permanent cartilages of the respiratory organs. In all these we have, at first, a simple ecchondrosis, but this may, afterwards, undergo various modifications; it may ossify, and we may ultimately have an exostosis, which, however, has proceeded from cartilage, or it may take on a retrograde action and assume an amyloid induration; or from the cartilaginous stadium new developments are made, so that the interior of the cells is full of little sacculi, and the whole formation may have almost the consistency of mucus. A transition point from the hyperplastic to the heteroplastic forms is offered by the—

Ecchondrosis of the articulations, which in their later development form the free or movable bodies of the articulations, known since the time of Ambrose Paré. These are often found in great abundance in the knee-joint, and are productive of great pain and discomfort. Their movability depends very much upon the number present; if it is a solitary one it is, of course, very movable; but the joint may be so full of them, and they may be so large, that they are entirely stationary. The question arises, whether they proceed from the cartilage, and are therefore ecchondroses, or from some other tissue, and must therefore be considered heteroplastic. Experience teaches us that both forms exist. The cartilage itself grows, and in some cases develops these outgrowths; in others they arise from the periosteum and the synovial membrane. The idea that they are originally fragments from the end of a healthy bone cannot be proved anatomically. They generally originate as pediculated outgrowths, and at length lose their attachment; after which they seem to undergo but little alteration. They are the results of irritative processes.

This leads us to the heteroplastic forms, the enchondroma; and these are again subdivided into the enchondroma proper and the osteoid chondroma; although, here again, the dividing line cannot be marked with perfect accuracy, as the two forms often run into each other. In the enchondroma proper, there are, as in cartilage itself, three distinct forms, the hyaline, fibrous, and reticulated cartilage; but these three may exist in one and the same tumour. It occurs in places where cartilage should not be formed, as in the bones, where it is most frequently observed, and also in the soft parts, as in the salivary glands, in the testes of men, and the breasts of women. It is found the most frequently in the earlier periods of life, and hence an argument for the possibility of a cartilaginous origin; sometimes it has been found to be congenital; in most cases it shows itself in the first decades of life. When such cases are presented to us, the history of the case shows that they have existed for long terms of years. From these facts the author thinks it probable that in the first developments of the bone certain irregularities have occurred, which give a predisposition to the formation of the tumour; that while the bones were growing, certain fragments of the original cartilaginous deposit did not ossify, and that these became afterwards the point of departure for the tumour. The enchondroma of the soft parts offer still less satisfactory indications for an opinion as to their origin. Without any great number of statistics upon which to base an opinion, the author thinks that they occur most frequently among women as enchondroma of the sub-mucous tissue, while those of the bones predominate in men. In no class of tumours do we find a traumatic origin so frequent as in these; fractures of the bones have been frequently known to result in the formation of enchondroma. They may also arise from chronic inflammatory processes.

The enchondroma of the bones has a certain predilection for individual parts of the skeleton. The bones of the hands and feet, the phalanges of the hands and the metatarsal bones of the feet, are the most frequent seats. Then comes the humerus, more frequent than the bones of the forearm, then the tibia and the femur in about the same ratio; the fibula is much more seldom affected. Of the bones of the trunk and head, the maxillary, the pelvic bones, and the scapula stand first; then the ribs, and the cranial bones, especially those of the base of the skull; least of all are the vertebræ, the clavicle, and the sternum affected. The greater number of these proceed from the body of the bone, a smaller portion from the periosteum; hence there are two groups, the central and the peripheral, or the internal and external. If it originates internally, it may remain latent a very long while. Those of internal origin generally proceed from the marrow, and have an areolar, and even lobular formation. The author establishes his theory of multiplicity from infection; each secondary point of departure is a result of this process. The peripheral forms are developed in the later years of life, and occur frequently in the pelvis, where the central form is seldom observed. These are raised much above the surface of the bone, gradually surround it, and send forth outgrowths in various directions. The subsequent history of the enchondroma of the bones, as well of the harder as of the softer forms, shows that they undergo a mucous-like softening, but this is much more common with the latter variety; thus a multilocular cyst may be produced, and it may be very difficult to determine what is the exact character of the cyst; we may be led to consider as a hygroma or a cysto-sarcoma, what is actually an enchondroma. The fluid in the cyst may become putrescent and lead to ulceration. The harder varieties have a greater tendency to calcification and ossification. The enchondroma of the bones is by no means as innocent as Johann Müller thought. From the extension into the soft parts masses have been carried into the lymph and bloodvessels, and metastatic forms have been noticed by the author.

The enchondroma of the soft parts resemble that already described in its forms of development, and its metamorphoses. These are, however, not simple in their character, but belong most frequently, especially when in glandular structure, to the class of combination tumours. The cartilage may be either lobular or nodular, and its substance is here also either hard or soft; the former variety being at one time of a hyaline, and at another of a fibrous, or reticulated character. The termination in softening is here much less frequent, while calcification and ossification are much more common. The cartilage is developed from the connective tissue, and is the result of an irritative process; in the glands it proceeds from the interstitial connective tissue. This form of enchondroma is very frequently observed in the lungs; here it exists in all its purity, having the character of permanent cartilage and exhibiting the processes of calcification and ossification. The author speaks here of the idiopathic and not of the metastatic enchondroma of the lungs. Next to the lungs the subcutaneous tissue and the fasciæ, and the submucous tissue in a limited degree are the seats of the pure enchondroma. Among the glands, it is, as has been stated, the salivary and the sexual, which are chiefly affected, and among the former, the submaxillary and the parotid. The enchondroma may be either diffuse, affecting the whole of the gland, or lobular, affecting only certain lobes; the former is seldom seen in the parotid, while it is the most common form in the submaxillary. The sexual glands in woman are much less frequently affected than in men. In the testicle it generally occurs complicated with some other kind of tumour. We thus see that the enchondroma of the soft parts is a heterologous formation, and therefore at all events suspicious; even when it is originally purely local, its enlargement by the formation of new nodules proves its capacity for infection. The enchondroma of the bones as well as that of the soft parts possesses this capacity of infection, and hence as a rule we would do well to extirpate them as early and as completely as possible. We cannot as yet draw the limits between the innocent and the malignant forms. In general, perhaps, the softer forms are more dangerous than the harder, but this distinction is not altogether clear. Of much greater significance is the nature of the organ affected, and especially its richness in lymphatics and bloodvessels, conditions which are exemplified most clearly in the testis.

The author then reverts to the osteoid chondroma which forms the most extensive bony tumours. At first they have some similarity to the peripheral enchondroma of the bones, but they soon surpass them in size; they have an irregular surface, and surround the entire bone. They are chiefly found upon the long tubular bone, and in these, upon their extremities, as upon the lower end of the femur and the upper end of the tibia. At first the periosteum covers them and forms their limit; but they soon penetrate it and extend into the surrounding tissue. The characteristic position of the tumour lies between the original bone and the surface of the tumour, whether it be within or without the periosteum. The legitimate termination of the tumour is in ossification, but it may occasionally undergo softening. Langenbeck removed such a tumour of enormous size from the arm; it contained a large cavity, which was emptied, and which would hold *four quarts* of fluid! The simple osteoid chondroma does not offer an entirely favourable prognosis; for it is heteroplastic, notwithstanding its almost homologous origin.

We have thus endeavoured to give our readers a general idea of the work now before us. If they are led to a careful perusal of the work itself, and to an honest appreciation of the labours and ability of the distinguished author, we shall be satisfied. The work abounds in excellent wood-cuts, all of which have undergone the closest scrutiny on the part of the author. A subsequent volume will be devoted to the consideration of the remainder of the subject. E. T. C.

BIBLIOGRAPHICAL NOTICES.

Art. XVIII.—*Transactions of State Medical Societies:—*

1. *Proceedings of the Nineteenth Annual Meeting of the Ohio State Medical Society, held at Ohio White Sulphur Springs, June* 21*st*, 22*d*, 1864. 8vo. pp. 94.
2. *Transactions of the Medical Society of the State of Pennsylvania at its Fifteenth Annual Session, held in Philadelphia, June*, 1864. 8vo. pp. 627.
3. *Transactions of the Medical Society of the State of New York, for the year* 1864. 8vo. pp. 503.

The proceedings of the *State Medical Society of Ohio* open with the valedictory address of the retiring President, Dr. W. P. Kincaid. It takes a very correct view of the general condition of our profession, and of some of the prominent reforms which are demanded in order to increase its usefulness and influence. The writer speaks with due earnestness of the high calling of the physician, and the duty incumbent on every one who assumes its responsibilities to make himself in all respects worthy of the important mission he is in consequence called upon to fulfil.

Following the address is a Report on Diseases of the Eye. By Dr. Metz, of Massillon. The report comprises some very sensible remarks on some of the causes of failure of the operation for the cure of strabismus, and the necessity of modifying it to meet the peculiarities and conditions of each case—the same operation not being equally adapted for the relief of the patient whether the deviation be one or six lines—whether the antagonist muscle is yet active, or entirely paralyzed—whether the object be to remedy a slight squint, or to restore binocular vision—or whether it be simply to correct a bad squint on account of cosmetic considerations.

Dr. M. discusses several other topics of interest, in relation to which he expresses views, some of which will not we suspect stand the test of experience.

Report on New Remedies, by Dr. Edward B Stevens. The new remedies noticed are *cinchonine* as a substitute for quinia. Being equally reliable as an antiperiodic and tonic with the latter, in doses about one-third larger, it recommends itself to our notice by its greater cheapness and the abundance of its supply. *Fraxinus nigra—swamp ash.* Recommended, from ten years' experience with it, by Dr. Denny, of Albion, Indiana, as a valuable substitute for quinia, in the form of a syrupy decoction or fluid extract. The dose is a tablespoonful frequently repeated during the state of apyrexia, a full dose of opium being added to the last dose in anticipation of the expected paroxysm. *Phloridzine*—a neutral principle existing in considerable quantities in the root principally of the apple, but also of the plumb and cherry trees; it is also noticed, on very respectable authority, as a substitute for quinia.

Ergot of wheat as a substitute for ergot of rye. Its advantages, according to M. Leperdriel, of Montpellier, over the latter are, its property of resisting decay and of preserving its medical virtues undiminished for a length of time; its containing fifteen per cent. less of the poisonous principle of ergot, while it yields twenty per cent. more of the efficacious principle.

Caulophyllum thalactroides is proposed as a parturient of more decidedly reliable efficacy than ergot. It is said to belong to the *cohosh* family. We know little in respect to its reputed properties.

Liquor bismuthi, a solution of bismuth, uniform in composition, stable, miscible with water or other fluids without precipitation, and efficient in small doses; hence a more convenient form for administering bismuth than that of either the trisnitrate or carbonate.

Saracenia purpurea—American pitcher plant. This has been recommended as an aborter of the smallpox. A careful examination of the subject has satisfied us that there is little evidence in proof of the asserted anti-variolous properties of the saracenia.

Permanganate of potassa. As a remedy in the treatment of low forms of disease—erysipelas, hospital gangrene, unhealthy ulcers, typhus fever, and the like. Dr. Jackson, of Philadelphia, found it decidedly useful as a tonic in dyspeptic conditions of the stomach, and Dr. Dunlap, of Springfield, Ohio, has experienced the most gratifying results from its use in spotted fever, as it appeared in and about that city.

REPORT OF THE COMMITTEE ON ASTHMA, by Dr. T. A. Reamy, of Zanesville. A very sensible report, so far as it goes; unfortunately, however, throwing but little additional light upon either the pathology, the therapeutics, or the prevention of the disease.

Particular attention is called by Dr. Reamy to the valuable results obtained from the administration of nitrate of potassa for the radical cure of asthma. He states that he has prescribed the remedy in forty-eight cases of the disease. Ten of these fully recovered; while sixteen were materially improved—the intervals becoming longer, the paroxysms milder. In the remaining twenty-two cases no manifest improvement was observed. Most of the cases in which recovery took place were complicated with either dyspepsia or bronchitis, some of them with both. In small doses, properly diluted, no bad effects were found to follow its administration. It stimulates to healthy action the feeble stomach. The manner in which the nitre was prescribed was by dissolving one ounce of the pure salt in one pint of distilled water, of which solution a tablespoonful was given three times a day.

NOTES OF A CASE OF GUNSHOT WOUND, and its results, with a few practical remarks, by J. G. Kyle, M.D., of Xenia. This case is introduced to show the danger of delaying to operate until a late period in cases where, from the extent of the injury, there can be little hope of finally saving a lower limb shattered and torn by a minie ball, with compound, comminuted fracture of the femur. How far the result of this case furnishes a charge against conservative surgery is a question we shall not attempt to decide.

2. The fifteenth annual session of the *Medical Society of the State of Pennsylvania* was opened by an address from the President of the Society, Dr. Wilson Jewell. The subject of the address is the early history of the principal medical institutions of Philadelphia. This subject was suggested by the fact that the session of the society was held in the lecture-room of the spacious fire-proof building recently erected by the College of Physicians of Philadelphia for the accommodation of its meetings, its library, and its pathological museum. The sketch given by Dr. Jewell of the institutions referred to, with a brief notice of their more prominent founders, is very well drawn up and replete with interest

Reports were received from only a small number of the county societies; these consequently furnish us with only a partial history of the sanitary condition of the State for the twelve months preceding their respective dates.

The first important fact we derive from the reports presented in 1864 is the very general prevalence of *typhoid or enteric fever* over those sections of Pennsylvania whose medical history they comprise. In various parts of Beaver County, mostly along the streams, and in low, damp localities, there occurred, according to the report from that county, a greater number of cases of typhoid fever than usual. Those who were attacked by it were very generally under twenty-five years of age. In Bradford County few cases of true enteric fever were observed; the prevailing fever being of what has been termed the bilious type, with a tendency to congestion of the brain and lungs. This fever, which commenced as an irregular remittent, if not arrested in its course, had a strong tendency to assume a typhoid form. In Indiana, also, remittents prevailed to a great extent, after a long protracted season of complete drought. In many cases, after the first week, a decided typhoid tendency was evinced, with pain in the back, more particularly at the cervical and dorsal regions. The duration of the disease was, it is stated, usually from two to four weeks. In most parts of Northampton County, we are told, all forms of fever are of rare occurrence. In South Easton, however, and its vicinity, typhoid or enteric fever is quite common, but it is said not to prevail to any extent elsewhere throughout the county. In the report from Perry County, Dr. Mateer, of New Port, on the west branch of the Juniata River, remarks that the most interesting disease which he had met with was a form of *mixed fever*. The patients were of both sexes and of ages ranging from fourteen to sixty years. "The attacks were ushered in with a chill, followed by fever, resembling the ordinary remittent fever which prevailed eight or ten years ago, along the shores of the Juniata River, during the autumnal months. There was pain of the head with slight delirium ; a locked-up state of the secretions, and of the liver especially ; aching of the extremities and loins, irritation of the stomach and bowels, with moderate discharges of blood from the latter, accompanied with a disposition to tenesmus and diarrhœa during the whole period of sickness, and until the liver could be induced to throw off copious discharges of bile ; immediately after which recovery would commence and terminate finally, at the end of a fortnight or more, in a restoration of health. When the disease began to yield it would assume an intermittent form ; this yielded readily to sulphate of quinia. The typhoid symptoms would linger about the system for several days after the fever had disappeared. The treatment consisted in a mild alterative course, sulphate of quinia to check the intermittent symptoms, followed by tonics varied to suit each case. All recovered. This mixed fever prevailed during the winter months and as late as May, 1864."

Dr. Lefever, of New Bloomfield, in the same county, also met, during the same season, with a similar mixed fever.

The prevalence of *Scarlet Fever*, to a greater or less extent in different sections, and of a more or less severe form, during the twelve months preceding the 1st of June, 1864, is noticed in nearly all the reports. In Beaver County it prevailed from January to the end of March, 1864. It is represented as having been of a mild form. In its treatment chlorate of potassa and the muriated tincture of iron were the chief remedies relied on. In Indiana the disease was also of a favourable type. In some families, during the winter of 1863–4, scarlatina and measles prevailed simultaneously, or, as the one disease had run its course the other would commence. In the report from Montgomery County, Dr. J. K. Reid says : "Scarlatina prevailed to a moderate extent. I treated it with ice internally and externally to the throat, with much better results than were produced by any of the remedies I had before seen used." Dr. Evans, of the same county, remarks : " For the last four years I have used cold water and ice as external local applications in scarlatina and other inflammatory affections of the throat, with beneficial results. Nothing seems to add so much to the comfort of the patient as a piece of linen crash wet with iced water, kept constantly applied to the throat and cervical glands. The idea of its being a dangerous remedy is preposterous—it deserves to be classed with the obsolete notion that cold water in fevers is attended with danger." Equally as decided testimony in favour of the local application of ice and iced water to the throat, internally and externally, in scarlet fever, is borne by Drs. Hiram Corson, Shoemaker, Leedom, William Corson, and other practitioners of Montgomery and other counties.

In Perry County, we are told by Dr. Lefever, an epidemic of scarlet fever commenced in 1863. The greatest number of cases seen by him were during the months of June and July. They occurred in children from fourteen to sixteen years of age. All recovered. For nearly six months from the beginning of July, no cases of the disease were seen. In the latter part of December it again made its appearance, but in a different locality, about one mile south of where it had before prevailed, near the mouth of a narrow valley, running in a southwesterly direction. A number of cases seemed to commence almost at the same time. To such a degree did it prevail that a school in the vicinity was completely broken up in a few days, and remained suspended for about a month.

Scarcely a single family in this valley escaped the disease. In one family Dr. L. saw seven, and in another six cases; in other families there were from one to four. The type of the disease was strikingly anginose; there were but few cases of simple scarlatina; several assumed a very malignant form, of which the termination was generally fatal. In the families in which the largest number of cases occurred, with the exception of one, there were no deaths. In the excepted one three died. In the family in which there were seven cases of the fever, the patients were in one apartment. Fortunately the house was very open, so that ventilation was tolerably well kept up. Several of these patients became dropsical, and lingered thus for a couple of months; but all finally recovered.

The course of treatment pursued at first was mildly antiphlogistic and alterative, with the free use, internally, of a solution of chlorate of potassa. Not deriving from it all the good he could desire, Dr. L. resorted to the use of veratrum viride, and with the most pleasing results. In a number of cases he used very little else. In many patients there was a tendency to diarrhœa, to arrest which he gave the acetate of lead, which seemed to answer better than any other article he had tried.

In Philadelphia County scarlet fever prevailed to only a moderate extent, and of a comparatively mild form. In the year 1861, the deaths from this disease amounted to the enormous sum of 1190, in the year 1862 they reached only 461, and in 1863 they fell down to 275.

In Westmoreland County, scarlet fever appears, also, to have prevailed under a very mild character. Dr. McGirr treated forty-eight cases, with no deaths directly attributable to the disease. One death occurred from pneumonia succeeding the fever, and another from cerebro-spinal meningitis, occurring during convalescence from the fever. In many of the cases of scarlatina, as well as of measles and diphtheria, during convalescence the patients were attacked with ulceration of the ears. This commenced as an attack of ordinary otitis; when suppuration took place the discharge was much more copious, offensive, and obstinate than usual. The ulcerations would heal, recur, and again heal for perhaps five or six times, before a permanent cure could be effected. In some cases fungous granulations were thrown out, blocking up the external meatus. The ulcerations were treated with frequent injections of a solution of castile soap in tepid water, followed by a wash of a solution of nitrate of silver, six grains to the ounce of water, and in some cases by the ointment of nitrate of mercury. The fungous granulations were destroyed by solid nitrate of silver, tincture of iodine, or dilute carbolic acid.

Very many patients, on recovery from scarlet fever, were attacked with repeated crops of boils, and some with carbuncles.

The treatment pursued by Dr. McGirr in the cases of scarlet fever seen by him, was the internal administration of the tinct. protochlor. ferri and chlorine water; brushing the throat with perchloride of iron, frequently gargling with diluted chlorine water, alternated with permanganate of potassa, especially when any fetor was exhaled from the throat. Quinine and opium, wine, milk punch, and a generous diet were given, *pro re nata*. The surface of the body was occasionally sponged with cold vinegar and water, a solution of bicarbonate of soda, or anointed with glycerine and sweet oil, as was most agreeable to the patient. Two very violent cases, in which the tumefaction about the throat was very great, were successfully treated by allowing, in addition to the above remedies, small pieces of ice to dissolve upon the root of the tongue and trickle down the throat. To both these cases paralysis of the left side succeeded, which was cured by galvanism.

In the same county Dr. McConaughy had treated about fifty cases of scarlet fever. About one-half were of a malignant type, of which eight died. Nearly one-half of the cases which recovered were attacked at the end of two or three weeks with dropsy, which yielded readily to treatment.

In simple, mild cases, Dr. McC. gave mild cathartics, diaphoretics, and chlorate of potassa. When the throat was affected, it was washed with a solution of the nitrate of silver. In malignant cases, with great prostration at the commencement of the attack, the greatest benefit was derived from the free use of carbonate of ammonia. When prostration came on after the subsidence of the fever, the most good was found to result from quinine and brandy, or old rye whiskey.

Dr. J. M. Stevenson, of the same county, remarks that, within the sphere of his practice, scarlet fever occurred in an epidemic form, from September, 1863, to the close of the ensuing winter. During this period he treated 163 cases, mostly of the anginose form. One of the cases was in a female over sixty years of age. Many adults who had had the disease previously suffered from all the symptoms of scarlatina, save the eruption. In some of these cases the affection of the throat assumed a troublesome and dangerous form. Ten deaths occurred. Of these, two never came under treatment. Of the remaining eight three died from anginose, and five from malignant scarlatina. In the fatal cases of scarlatina anginosa, death was caused by the immense tumefaction of the cellular tissue, within and without the throat; it was attended with all the symptoms of suffocation.

"In the malignant form," says Dr. S., "of which there occurred fourteen cases with five deaths, regarding the condition as one of internal congestion, I used the warm bath with smart friction, repeated frequently. I gave calomel and rhubarb as a purgative, and carbonate of ammonia and wine. One patient died in nine hours, one in fifteen hours, and the remaining three on the second day of the attack. Whenever a permanent reaction took place the patients recovered. In the anginose form, in several cases which threatened to be severe, I applied pounded ice to the throat, with marked improvement of the symptoms. It appeared to diminish the swelling and relieve the engorgement of the mucous membrane."

Measles is stated to have prevailed very generally in nearly all of the counties of the State from which reports were received. In Beaver County the disease made its appearance towards the close of the year 1863. It was at first mild in character, but during the early months of 1864 it became frequently complicated with pulmonary affections of a more or less severe grade. Several of the cases thus complicated, occurring in children and old persons, proved fatal. In Bradford County similar complications were observed, with the same result. In some cases, towards the period when the eruption became fully developed, obstinate vomiting and profuse diarrhœa set in.

In Indiana County, during the years 1863 and '64 there was a severe epidemic of measles, affecting persons of all ages, from infancy to sixty years. In some cases there was delirium, with other nervous disturbances. There was, also, a strong tendency to inflammation of the lungs, and sometimes of the stomach and brain; severe pain of the head and back, with continued vomiting, was also observed. In the more severe cases the eruption did not appear until the fifth or sixth day. It was mostly irregular, and of a livid hue. Many of the cases proved fatal.

In Montgomery County measles prevailed most extensively; scarcely a single inhabitant, we are told, escaped, excepting infants under a month, and such as had previously undergone the disease. Cases were observed in individuals over seventy-five years of age. In many instances profuse diarrhœa proved a troublesome symptom. In some sections the disease was of a low type, and complicated, at first, with severe bronchial affection. Its complication with pneumonia is noticed by several practitioners. Notwithstanding its extensive prevalence throughout the county, the mortality from the disease appears to have been very slight. Dr. Shoemaker, of Jenkintown, treated all his cases with cool drinks, free ventilation, and some mild expectorant. Dr. Newberry, of Flourtown, allowed his patients ice *ad libitum*, and found nothing so grateful to them, nor so efficient in allaying the thirst and irritability of stomach so often present before the eruption makes its appearance. Instead of checking the eruption, it was found often to appear soon after commencing with the use of the ice, and in some cases where the eruption had failed to appear under the sweating process. In no instance was injury found to result from its use. Dr. Corson, of Plymouth, has used cold drinks and cold sponging in the treatment of measles, since the year 1828, and with the best results.

In the report from Northampton County it is stated that in the early part of the summer of 1863 measles appeared in a mild form, very many of the cases presenting no bronchial symptoms. During the succeeding months some of those who had passed through these mild attacks were again attacked, and went through all the characteristic symptoms of the disease.

Measles prevailed to only a slight extent in Philadelphia County. From the disease eighty-two deaths are reported to have occurred in 1863, twenty-seven less than in 1862, and eight more than in 1861.

In the report from Westmoreland County, Dr. McGirr states that during the twelve months embraced in the report he treated ninety-two cases of measles; of these two died, one from typhoid pneumonia and one from cerebro-spinal meningitis, both occurring during convalescence, in patients under ten years of age. Dr. McGirr notices, as a remarkable circumstance, that those cases in which cold drinks were allowed had a more tedious convalescence, and were more liable to attacks of broncho-pneumonia. The treatment consisted in the administration of quinia and opium, milk-punch, sudorifics of a non-depressing character, and a generous diet. Complications were met in the usual manner, while strict attention was given to supporting the patient's strength.

Notices of the occurrence of SPOTTED FEVER are presented in the reports from Chester, Montgomery, Northampton, Philadelphia, Susquehanna, and Westmoreland counties.

In Chester County the disease appeared towards the close of the winter in 1864. The greater number of the cases were in persons under eighteen years of age. Its greater prevalence among the young and in females is very generally noticed in the reports above mentioned; cases of it were by no means rare, however, in patients of a more advanced age, and in males.

Dr. Oliver, of Coatesville, reports eight cases as occurring in his vicinity, all of which proved fatal. Four of the patients died within forty-eight hours, three lasted five days, and one two weeks. The disease was invariably ushered in by "chills, vomiting, and pain and rigidity of the posterior cervical muscles, accompanied with evidences of great prostration." Light-brown blotches were apparent from the first; they grew darker after death. The treatment consisted of tonics, counter-irritants to the spine, the warm bath, and terebinthinate embrocations.

Dr. Leedom, of Montgomery, remarks, in relation to the treatment of spotted fever, that, having found cathartics, sinapisms, blisters, and internal stimulants unavailing, he resorted to a combination of calomel and opium, with good results. To a girl fifteen years of age he gave one grain of opium and two grains of calomel every hour for eleven hours in succession, when, some soreness of the mouth appearing, the calomel was omitted, while the opium, in half-grain doses, was continued every two hours until the dorsal muscles began to relax, and then at longer intervals. After the backward curvature of the spine had disappeared, and the patient could bend forward without inconvenience, the opium was discontinued, and the cure completed by the administration of from two to four grains daily of sulphate of quinia, with a nourishing diet. Dr. Reid, of the same county, speaks favourably, in cases of spotted fever, of active irritation of the extremities, stomach, and spine, by sinapisms, of cold to the head, and keeping the patient completely under the influence of anodynes until the first stage of the disease is past, when tonics and stimulants will be proper. Dr. Greene, of Northampton County, tells us that the treatment pursued in his vicinity was a free use of alcoholic stimulants, quinia, iron, with sinapisms and blisters to the spine and extremities, and morphia and other preparations of opium to quiet nervous excitement and procure sleep when the patients were wakeful. Of twenty-eight cases thus treated, six died, and two were still under treatment.

In the report from Philadelphia County is given an account of the disease as it occurred in certain portions of the county, with a notice of its relationship with other similar epidemics observed in the Eastern States, at different periods during the earlier years of the present century, with a few cases, in detail, of the disease, illustrative of its usual features and course when terminating favourably.

It is stated, in the report from Westmoreland County, that Dr. James McConaughy, in his report to the county society, referred to a case treated by him, in conjunction with Dr. Anawalt, Surgeon 11th Reg. P. V., in which ten grains of quinia and one of morphia were given at intervals of one or two hours, until three doses were taken, with "a salutary" result. This heroic practice is said, on the authority of Dr. Anawalt, to be that pursued in the army. From his further experience with it, Dr. McC. is led to believe that it is the one best adapted to the disease.

In all the reports in which mention is made of spotted fever, its close resemblance to cerebro-spinal meningitis is noticed; its non-contagious character is also very generally asserted, as well as its occurrence for the most part in the young, its sudden onset, and its rapidly fatal course in the larger number of the more violent cases.

In the report from Indiana County an account is given of an epidemic of *Cerebro-spinal Meningitis* which prevailed in that county during the year 1863 and the first five months of 1864. It generally made its onset suddenly, with pain of head and vomiting, soon followed by pain in the back, dyspnœa, distressed expression of countenance, and delirium. The pulse, in the majority of cases, was at first small and frequent. In the commencement of severe attacks the surface was usually cold. There was early delirium, great jactitation, followed by moaning. Pupils either contracted or dilated. There was often ophthalmia, with intolerance of light and of sound; sometimes insensibility to light, with deafness. Usually there was thirst, constipation, and suspension of the secretions generally. The muscles of the neck became early contracted, drawing the head backwards, or sometimes a little to one side; occasionally there was rigidity of the entire tract of spinal muscles. Many thus attacked died within from twelve to thirty-six hours. In other cases complaint was made for several days of lightness of head, debility, loss of appetite, general soreness of the body, with occasional sharp local pains. Occasionally symptoms of pneumonia or pleurisy were present for a few hours, when there occurred a sudden transition of pain and suffering to the abdomen, bowels, kidneys, or brain. These pseudo-inflammatory phenomena sometimes lasted for days. The patient had a wild, vacant air; answered questions incoherently. Pressure along the spine detected tender spots, of which the patient had not been conscious. After a few days the patient presented a distressed and delirious aspect, when stupor would set in, and gradually increase in intensity. There was generally moaning, with restlessness. The slightest touch often caused the patient to complain. Intense, continued coma was generally a fatal symptom.

Individuals of all ages and sexes were liable to an attack, but the disease was confined chiefly to unmarried females between sixteen and twenty-five years of age. In some cases petechiæ and rose-coloured spots appeared.

Recovery was very slow. The stomach would often bear sufficient nourishment, and the bowels be regular, and yet emaciation go on to an extreme extent, though the face were, at the same time, full, and the features natural.

The treatment pursued was rather heroic.

Diphtheria appears to have prevailed, to a greater or less extent, very generally throughout those portions of the State from which reports were received. From the observations furnished by different practitioners we gain but little additional light upon the causation, the pathological nature, and the treatment of the disease. It was found to prevail alike at all seasons; under all meteorological conditions; in all localities, city and country, low and elevated; in both sexes, and in individuals of almost every age. In Indiana County the mortality from diphtheria is said to have been the same, or nearly so, in every locality. In Philadelphia County the deaths caused by the disease were one-third larger than in 1862, while they fell sixty-eight short of those in 1861. Most of those who give us their experience in respect to the treatment of diphtheria state that only the mildest applications to the throat proved beneficial; caustic and all irritating applications are pointedly objected to. In the report from Montgomery County strong testimony is borne, by the leading physicians of the county, based on personal and extended experience, to the curative effects, in cases of diphtheria, of the application of cold water and ice to the throat, both internally and externally.

Erysipelas appears to have prevailed to a considerable extent in most of the counties from which reports were received. In some neighbourhoods it assumed the character of an epidemic, though it was in general of a mild type, and productive of but a slight mortality; in certain sections, however, it exhibited great severity, and when attacking the face, mouth, tongue, and fauces, most generally terminated fatally.

Smallpox also is mentioned as a prevalent disease in nearly all of the reports received. In Philadelphia County 171 deaths from it are recorded as occurring during the year 1863; in 1862 the deaths from the disease were 264; and in 1861, 758; showing its rapidly decreasing prevalence, which is attributed to the subsidence of the epidemic variolous influence, the reduced number of the unprotected, and to the increased attention paid to vaccination and revaccination. Wherever these have been faithfully and extensively performed, the reports comprised in the volume of *Transactions* under notice furnish ample evidence of their power to prevent the extension of smallpox amid the community at large, or beyond the house into which it has been unfortunately introduced by fomites or personal contagion.

In respect to *revaccination*, it is very correctly stated, in the report from Chester County, that too much carelessness has been evinced in determining the validity of the second operation. If matter is introduced into the arm of such as are reputed to have been previously vaccinated, and no pain is felt or redness exhibited at the seat of the puncture, it is taken for granted that the first operation had been successful, and the protection furnished by it from the variolous infection complete. Such negative result, it is remarked, proves nothing further than a lack of *insertion success;* the only positive evidence of the virus having reached the blood is furnished by an occurrence of itching and redness at the place where the virus was inserted. These phenomena are the invariable indices of successful revaccination, however frequently performed.

In the report from Bradford County, for 1862, reference is made to the occurrence in the vaccinated of severe erysipelatous inflammation of the arm, terminating in some instances fatally, and dependent evidently upon some prevailing morbific condition of the atmosphere; while in 1863 no such result was observed in the vaccinations performed in certain of the neighbourhoods where it was observed in 1862, in other neighbourhoods the local affection resulting from the introduction of the vaccine virus, even when known to be of a good quality, generally, in the course of a week, assumed an erysipelatous character, and spread to different parts of the arm, and occasionally a similar inflammation occurred upon the face. In other cases the vaccination assumed an appearance like that of crusta lactea. In other instances, again, the vaccination went on without accident until the period when the scab was about to separate, when an eruption would occur about the pock and at various other places, continuing for weeks in maturing and scaling off, and then making its appearance at some other spot. From the middle of February to the first of May this peculiar condition attendant upon vaccination was witnessed in many parts of the county.

Pneumonia, *Bronchitis* and *Pleurisy* were prevalent diseases in those portions of the State of Pennsylvania from which reports were furnished. From several counties we have startling statements in regard to the treatment of these diseases. In the report from Bradford County Dr. Allen says: "My cases of pneumonia and pleurisy did well under the free use of brandy or whiskey, quinine and the essence of beef—a practice which I dared not have attempted a few years ago." In the report from Chester County we are told that "pneumonia and catarrhal affections were frequent during the cold weather of the winter of 1863–64, but were very amenable to treatment. In no case was the lancet or veratrum viride employed, but stimulants, opiates, and blisters, with the occasional use of ipecacuanha, comprised the entire treatment of the vast majority of cases. In instances of protracted hepatization, the oil of turpentine was administered externally and internally, with invariably beneficial results."

In the report from Montgomery County, Dr. Newberry remarks that he had had what might be termed an epidemic of pneumonia, prevailing in the early months of 1864. It affected both adults and children, but especially the latter. The attacks were generally severe, and often complicated with affections of the brain. "The type was of a low character, needing stimulants early. In many cases tinct. verat. viride had a most happy effect, while in others it was useless." Dr. Shoemaker, in the same report, speaks of a disease he calls epidemic catarrh, which prevailed in his neighbourhood about the same time as that spoken of by Dr. N., which attacked almost everybody. There was much inflammation of the fauces and tonsils, with ulceration of the latter. All those attacked got well under the ordinary treatment for catarrh. Dr. Vanartsdale, also in the same report, says that pneumonia prevailed to some extent within the circle of his practice, in persons of all ages. It was of nearly all grades, but mostly inflammatory, and requiring an antiphlogistic treatment.

In the report from Westmoreland County, the prevalence of bronchial diseases is noticed. Dr. McGirr remarks that a large proportion of the cases of measles were followed by pneumonia. He himself treated, during the year ending May 1st, 1864, 131 cases of pneumonia, with 7 deaths. One from pneumonia after scarlatina, two after measles, two after hooping-cough, and one uncomplicated. The first five of these fatal cases were in patients under ten years of age. Only one of the cases was bled. In this the congestion of the lungs had become so great from neglect, when first seen, and the danger so imminent, that suffocation was feared before relief could be obtained, even by the lancet. The patient recovered, after a protracted convalescence. The usual treatment was by quinine and opium, with free counter-irritation by blisters and croton oil liniment. Expectorants and sudorifices of nitre and ipecacuanha or Dover's powder, were administered with veratrum viride, and, as soon as possible, an actively supporting treatment.

In the same report Dr. McNeil remarks that the symptoms of pneumonia, as it prevailed in his section of country, were not attended by the same high degree of fever as is usually the case. There was less heat, a less frequent and tense pulse. Usually the form of the disease was low and insidious; it often followed in the progress of measles or other disease; the breathing became hurried, the thirst increased, the pulse accelerated, and an expectoration of the characteristic rusty sputa took place. In most of his cases of typhoid fever secondary pneumonia set in as soon as the primary disease began to decline. Hooping-cough, and most of the cases of ordinary catarrh run into "the semi-inflammatory" broncho-pneumonia. The duration of the disease was often protracted to two or four weeks. Its subjects were mostly persons between the ages of two to eighteen or twenty years. The old were seldom attacked. The treatment consisted principally of counter-irritation, ipecacuanha, nitre, and preparations of prunus virginiana internally; veratum viride and tartar emetic were found to have been too depressing in their effects. "Time, good nursing, and cheerful temper, contributed much to a final recovery, which took place sooner or later."

Hooping-Cough prevailed to a greater or less extent in most parts of the State heard from. We learn from the reports under consideration nothing new in relation to its pathology or therapeutics; we may except, however, the remarks of Dr. Green, of Northampton Co., on the curative effects of bromide of ammonium in its treatment. It was prescribed by him in 30 cases, and in all stages of the disease. In some instances in a few days after the taking of a single dose the disease ceased. The remedy was given in doses of from two to six grains three times a day, in mint or cinnamon water and syrup. The great advantages attending the remedy are its prompt and decided action upon the disease, its perfect safety, and not unpleasant taste.

The remainder of the diseases referred to in the reports comprising the volume of *Transactions of the Pennsylvania State Medical Society*, were only of occasional and very restricted occurrence, familiar in their characters, regular in their course, and amenable to the ordinary plans of treatment. Two or three surgical cases of some interest occur; the space we have already occupied prevents us, however, from presenting an analysis of these, or any notice of the biographical sketches appended to one or two of the county reports.

Before concluding our notice of the Pennsylvania Transactions we desire to call the attention of our readers to the very instructive paper appended to the report from Montgomery, "*On the External Application of Ice to the Throat* as a Remedy in Scarlet Fever and Diphtheria," by Dr. Hiram Corson. The facts adduced in this paper are such as to encourage physicians to resort promptly and freely to the use, in proper cases, of one of the most effective and at the same time simple and manageable remedies we possess in nearly all acute inflammatory affections, in whatever tissue or region of the body they may be seated.

3. *The Transactions of the Medical Society of the State of New York* open with an address from the President, Dr. Daniel P. Bissell, of Utica. The subject of the address is Medical Progress. Though a somewhat hackneyed one, it is treated by Dr. Bissell with great ability and spirit. His remarks throughout exhibit a just appreciation of the importance of scientific medicine and the progress it is constantly making in all its departments; thus extending its usefulness and confirming its foundation in the confidence of the public.

Following the address is a somewhat elaborate paper, by Dr. Edward Seguin, on *Idiocy;* its diagnosis, and its treatment by the physiological method; with suggestions on the application of this method to the treatment of certain diseases, and to education in the public schools. The subject of this paper is one that commends itself not merely to the medical profession, but to every parent, every philanthropist, and every enlightened legislator. The success that has attended the labours of the few who have attempted the eliciting of a useful amount of mental power in children unfortunately born with a defective mental development, and thus to increase their powers of enjoyment and usefulness, has been such as to warrant the hope that by close attention to the study of idiocy and its removable causes, more effectual means for its amelioration than those we now possessed may hereafter be discovered and brought into successful operation.

The remarks of Dr. Seguin on the diagnosis of idiocy in its several degrees, will be read with deep interest and profit by both the professional and unprofessional reader. His suggestions in reference to the necessity of a proper system of physiological training for the pupils in our public schools are pertinent and full of truth. The serious consequences resulting from the want of such a system are often overlooked entirely, or, if suspected, are scarcely appreciated to their fullest extent by either parents or teachers. "Everything convinces us," says Dr. Seguin, "that the senses—all the senses—have a claim to their full development, not only because it is by such development alone that the human instrument can be brought up to its full measure of harmonious action, but because the senses thus cultivated and trained, will bring to the soul a far more bountiful share of enjoyment, for we consider the senses as 'the doors through which ideas and images enter the mind and come out of it.' When we are able to apply these principles to the solidification of the youth of the nation—to the adaptation of our men and women to the sancity of labour and of the national defence; to the intellectualization of the senses, we shall then begin to understand what the training of the mind in the future must be—of how little importance it is, that new objects should be brought into the study, but how absolute the necessity that every intellectual faculty—we consider them as functions—should be cultivated and made to produce the most abundant intellectual harvest."

The next paper is a prize essay by Dr. A. N. Bell on the extent of the protection afforded by vaccination, and the danger of communicating other diseases by the operation. After an examination of the more prominent facts bearing upon the first of these questions, Dr. Bell believes the following to be the conclusions to which they clearly lead. 1st. That smallpox and cowpox are in their nature identical. 2d. That vaccination confers a strong protective power against epidemic diseases generally and smallpox in particular. Against death from smallpox, the protection it affords is almost perfect. 3d. That of those who have never been vaccinated, or have not had unmodified smallpox, 20 per cent. are not, while 80 per cent. are liable to an attack of unmodified smallpox, and to the same extent are susceptible to the protection afforded by perfect vaccination. 4th. Of those who have had an attack of unmodified smallpox, about 43 per cent. will be found wholly protected from a second attack at adult age, while 57 per cent. are liable to an attack in some form or other. 5th. Of those who present marks of a successful vaccination, 40.5 per cent. are perfectly protected, while 59.5 per cent. are susceptible to varioloid and to the protection of successful revaccination. 6th. That the degree of protection afforded by an attack of unmodified smallpox, from a subsequent attack of variola is only 2.5 per cent. greater than the protection afforded by vaccination. This slight proportion in favour of the protective power of smallpox may be reasonably attributed to spurious or to defective vaccination from a variety of causes. 7. Of adults with imperfect evidences of vaccination only 23 per cent. will be found protected, while 77 per cent. are susceptible to smallpox in its unmodified or modified form. 8th. The liability to varioloid after ten years of age, in those vaccinated when under three years of age, and the increased liability again from fifteen to twenty-five years of age, proves that, in general, protection by vaccination under twenty-five years of age is complete for about seven years only; while by vaccination after twenty-five years of age, the protection afforded is complete for a greater length of time, proportionate to the age of the individual when vaccinated. 9th. Protection is known to be complete only when the attempt at revaccination with pure active vaccine virus fails.

As to the danger of communicating other diseases with vaccinia, Dr. Bell concludes, that "with carefully taken lymph, or with a scab from the perfect vaccine vesicle, there *is no danger of communicating other diseases.*"

Had we the time and space to adduce all the facts which are upon record bearing upon the questions discussed by Dr. B., we should be able, we think, to show that these by no means bear out all the conclusions arrived at by him. We would only remark here, that the possibility of communicating other diseases by vaccination is established by repeated observations, the accuracy of which can admit of no doubt, consequently the necessity of choosing a perfectly healthy child from which to procure matter for subsequent vaccinations should be strongly impressed upon the mind of every physician, lest, in his attempt to guard the system against one formidable malady, he inoculate it with another, more insidious in its operation, but not less destructive.

On the *Food of Cities* is the title of the next article. It is from the pen of Dr. S. M. Percy. The questions as to the wholesome quality of the food of cities, and the several causes which tend to the impairment of its nutritive qualities, or to its utter deterioration, so that it is rendered not merely inadequate or unfit for nourishment, but converted absolutely into a direct source of severe disease, are all important. They claim the attention not simply of the physician in his study of the etiology and prevention of disease, but of every head of a family, of every individual in fact, and call upon the municipal legislatures to devise means to keep out of the reach both of rich and poor such articles of food, more especially such as, without necessarily offending the senses, shall be proved to be injurious to the health of those who partake of them.

In the paper of Dr. Percy will be found much that has a direct and important bearing upon some of the questions involved in the general subject of which it treats; but without exhausting even these, much less following out in all their bearings the important matters pertaining to the wholesomeness of the food supplied to the inhabitants of our larger cities.

Art. V. *Disinfection.* By Dr. A. N. Bell. After an examination of some of the leading substances that have been employed as disinfectants, Dr. B. arrives at the following conclusions:—

"1. The various compounds, including chlorine and the salts which evolve it, hitherto used as disinfectants, have generally failed in their purpose; and probably because of the organic and non-gaseous nature of the virus which it is essential to destroy.

"2. That inasmuch as a temperature of 140° Fahrenheit, which coagulates albumen, if kept up for forty-eight hours, effectually disinfects the worst fomites, we have in this fact alone strong evidence of the identity of virus with organic matter.

"3. That the necessary degree of heat for disinfection may be applied in some form to almost every article of commerce or apparel liable to the virus of infection or contagion, without injury.

"4. That the examples furnished are an amply sufficient guide for the application of heat under the most variable circumstances."

Art. VI. *Glycogenic Function of the Liver.* By H. Townsend, M. D. The physiological portion of this paper is introductory to the account of a case in which the existence of sugar in the human liver was demonstrated in the autopsy of a man, thirty-five years of age, of a robust, well-developed frame, who, in the midst of entire health, was killed in a fray, almost instantly, by a ball shot from a pistol through his heart. The presence of sugar in the liver was detected by Kletzinski's cupro-potassique test, as well as by Trommer's test and the others in more common use.

Art. VII. *Analysis of Blood Stains, a means of detecting Crime.* By Dr. J Towler. A most interesting case in which Dr. T. decided that certain blood stains on a woollen cloth were not those from the blood of an ox, which they were asserted to have been by the person of whose dress the stained cloth formed a part, and who was accused of murder. The decision of Dr. T. was based mainly, if not entirely, upon the size of the corpuscles after they had been restored to their proper bulk by the endosmosis of water. The fact that the stains in question were those of human blood, and not that of an ox, was proved by the confession of the accused after his conviction by a jury.

Art. VIII. *Toxicological Contribution.* By Dr. W. Manlius Smith. The article embraces the history of two cases of poisoning which fell under the observation of the writer. The first from arsenic contained in bread eaten by an entire family of five or six persons. All recovered. The chief symptoms produced by the poisoned bread were sickness, vomiting, and abdominal pain. These all disappeared within a few days. The bread had a peculiar and disagreeable taste—slightly astringent, and at the same time moderately acrid.

The second case was that of a female poisoned by strychnine. Clear indications of the presence of strychnine were detected in the contents of the stomach, and also in the liver of the deceased, about a fortnight after the body had been interred, in both cases, by the colour tests, and in the first by the physiological action of the poisoned fluids on frogs.

Art. IX. *Spinal Irritation, or the Causes of Backache among American Women.* By Dr. Chas. F. Taylor. The term spinal irritation, so commonly applied of late years as an explanation of the spinal pain and uneasiness, and the often attendant general nervous symptoms, Dr. T. condemns, and we think very properly, as indicative of no existing lesion, of no pathological condition, but as vague, indefinite, and incomprehensible. He has endeavoured to show that the whole category of symptoms to which the term spinal irritation has been applied, from the simple persistent backache to the extremest sensibility, intolerant of the slightest touch, is entirely muscular, wherever localized, and results wholly from a peculiarly susceptible condition of the nervous system in certain constitutions.

The cause of this neuristhenia in the American female is referred mainly to the improper condition in which she is placed in reference to her domestic, educational, and social culture, by which every portion of the girl's being, from infancy upwards, is made subordinate to the intellectual and the emotional, while the organic system is left almost entirely out of sight. The result of this one-sided development is an assemblage of organs scarcely able to perform their respective functions, and a nervous system especially apt to translate the normal exercise of the functions of nearly all the organs into the language of distress, if not of pain, rather than that of comfort or pleasure, which is the normal result of a well-balanced condition of the several parts of the organism between themselves, and as a whole. In such constitutions we meet with painful digestion, neuralgia, dysmenorrhœa, headache, etc., and still more commonly muscular uneasiness, soreness and pain not only of the muscles of the back, but of any particular muscle or group of muscles which from any cause is subjected to greater stress than the rest, or to what it is ordinarily used. The most sensitive portion of any muscle is at its musculo-tendinous union. Those muscles which are most frequently brought into play, and have at the same time the greatest weight to sustain, will be those most commonly and severely affected. This is true of the muscles of the back, which are, likewise, subjected to the greatest abuse from incorrect and inconsiderate habits of life; a prolonged sedentary position; improperly constructed chairs and lounges; improper couches and beds for repose at night; improper dresses; high-heeled shoes, etc.

Dr. T. is very pointed in his animadversions on the narrow view of female pathology, which sees only uterine disease in every woman who complains of pain in the lower part of the back, and especially that disposition, too often manifested of late, to consider every, even the slightest, dislocation of the womb the origin and sole cause of all the symptoms which may happen to exist in any and every part of the female body.

In respect to the treatment of the backache and other muscular uneasiness and pain to which females of a morbidly exalted nervous susceptibility are liable, Dr. T. remarks as follows: "We must first rest our patients—curtail the expenditure of the nervous force—and then begin our muscular exercise in the most careful and judicious manner. It makes little practical difference whether feebleness of bodily organs has been engendered by enervating habits, neglect of physical exercise when young, or by other causes, we have to treat the patient as we find her, and it is not the absolute, but the relative activity of the nervous and organic systems which constitutes the condition these patients present. Our object is to correct this disproportionate action. While we do it, and in order to do it, we must keep the expenditure of nervous force at its lowest point. All care and mental occupation, further than the merest amusement, must be temporarily thrown off, and even the ordinary occupations, though not in themselves harmful, had better be for the time set aside. And for the reason that gymnastics or other adequate muscular exercises require a large expenditure of nervous force, we must use such exercises as can be taken with very little such expenditure. This is the rule; how completely it shall be applied in a given case, will of course depend on the circumstances of that case."

"In the treatment of a case of so-called 'spinal irritation,' or backache, according to the physiological views just expressed, we must secure three conditions, in the order in which they are named: 1st. A temporary diminution of the loss of nervous force, by curtailing the action of the brain and nervous system. 2d. Rest for the relatively over-used muscles of the back. 3d. Exercise of the whole muscular system, in order to increase organic development out of material saved."

For a full account of the plan of treatment, and the mechanical appliances suggested by Dr. T., by which the muscles are to be exercised without unduly fatiguing the nerves, we must refer our readers to the paper before us, where they are fully illustrated by drawings, and their results, by the history of several cases, given in detail.

Art. X. *Case of Traumatic Hemorrhage following Tracheotomy*, arising from the imperfect form of the tracheal tubes used; with remarks on the *Treatment of Croup by Inhalation of Steam*: illustrated by cases. By Dr. Lewis A. Sayre. The reader can only form a correct conception of the improvement in the tracheal tube suggested by Dr. S., and its advantages, by consulting the drawings which accompany his paper. In respect to the inhalation of steam as a remedy in croup, Dr. S. admits there is nothing novel; but he believes that the ineffectual manner in which such inhalation has been attempted to be accomplished heretofore, is the main cause why so little good has resulted from it. He proposes to fill the entire chamber occupied by the patient with steam, keeping up a constant temperature there of from 85° to 90°. By adopting this plan the patient, in any position he assumes, is compelled, so long as he breathes, to inhale the heated vapour. The maintaining of the latter constantly at a temperature of 85° to 90° Fahr. is, according to Dr. S., all-important; otherwise the exudation from the mucous membrane will be so viscid and tenacious as to adhere to the trachea and cause suffocation: whereas at the temperature indicated, the inhaled vapour renders the exudation more liquid and easy of expectoration. By the adoption of Dr. S.'s method in the early stages of croup, the formation of false membrane, he states, will be prevented, the fluid state in which the exudation is kept rendering it easy of expectoration.

If the case be not seen until the trachea has become nearly closed, and suffocation is imminent, we may then be obliged to perform tracheotomy to give immediate relief, but the inhalation of warm vapour must be still kept up in order to prevent a new formation of membrane. "Even in the most formidable cases," remarks Dr. S., "we may sometimes effect a resolution by the free inhalation of steam without an operation."

Art. XI. *Compound and Comminuted Gunshot Fractures of the Thigh, and the means for their transportation.* By Dr. J. Swinburne, of Albany. This paper is full of instruction to the army surgeon. A very ingenious plan is suggested by which, in cases of fractures of the thigh, a system of extension is carried into immediate effect by making the stretcher upon which the patient is placed to be conveyed from the field an effectual splint. How this is done can only be understood by consulting the description given by Dr. S. in connection with the diagram by which it is accompanied. Transportation is by this plan rendered easy and comfortable, the evils resulting from splints and bandages obviated, while the fracture can be treated until it is well upon the stretcher, even without an hospital tent.

Appended to the paper of Dr. S. are, first, an exposition of the nature of the injuries which demand amputation, and, second, rules for excision of joints and simple fracture of the shaft of the long bones.

Art. XII. *History of a case in which a series of plastic operations were successfully performed for the restoration of the right half of the upper lip and adjacent portions of the cheek and nose.* By Dr. Gurdon Buck. A most instructive case showing to what an extent a well-devised and skilfully-performed plastic operation, in cases of deformity of the face resulting from injury or disease, is capable, even under apparently unfavourable circumstances, of improving the personal appearance and otherwise benefiting the patient.

Art. XIII. *Case of Impalement of the Vagina.* By Dr. O. White. A young married woman, twenty-two years old, on descending a dark staircase, was thrown upon her back and caused to slide downwards upon the handle of a brush which rested upon the stairs, and inclined upwards. The handle was four feet long, one inch in diameter, and having a blunt rounded extremity. This handle entered the vagina without wounding or bruising the external parts, and passed up the canal for three and a half to four inches, when it penetrated the left side of its wall and entered the cavity of the abdomen, until from nine and a half to perhaps twelve inches of the handle with the suspension cord running through it. were within the body, the patient feeling it under the short ribs of the left side. On introducing the finger, the hole in the wall of the vagina through which the handle had passed was distinctly felt, at a point on the left side, and as high up as the finger could reach. With comparatively little suffering and no untoward symptoms, at the end of thirteen months from the occurrence of the accident, the patient was in the enjoyment of good health.

The histories of two other cases of impalement per vaginam are referred to—both published originally in this journal in the year 1853.

"The fact, common to all these cases," remarks Dr. W., "that there was little or no injury to the soft parts, is a remarkable one. That they should all have recovered from their terrible wounds is still more astonishing, and when taken into consideration with the very considerable number of recorded cases of impalements into, and transfixions through other parts of the body, from which the unhappy sufferers have recovered, is calculated to encourage the professional man in attendance upon such an accident to persevere in the most assiduous attentions and faithful ministrations, in the hope that, in conjunction with the recuperative powers of nature, he may thus restore to health his dreadfully afflicted and suffering patient.

"How much the favourable termination of these cases may be owing to the hemorrhage that follows the reception of the wound, acting as a preventive of any high degree of inflammatory action, and to the location of the wound itself, in the most depending part of the body, or of the great cavities that have been penetrated, by which the blood, as well as the discharge after the hemorrhage has ceased, finds, by its own gravity, a free exit, instead of remaining behind, as a cause of local and constitutional irritation, Dr. W. leaves to others of greater surgical experience than himself to decide."

Art. XIV. *Report of a Case of Gunshot Wound of some standing; extraction of a bullet lodged in the femur.* By Dr. A. B. Shipman. The case is an interesting one, and peculiar, showing the penetration of the os femoris by a minie ball, without splintering or fracturing it. The portion struck was near the centre, on a line from the base of the trochanter major to that of the minor. A curious circumstance connected with the case was the bed of the ball in the substance of the bone being lined with a membranous smooth, tough cyst, protecting the bony surface from the direct pressure of the ball.

Art. XV. *Ligature of the Subclavian Artery.* By Dr. J. H. Armsby. This case will be found related in our No. for April last, p. 564.

Art. XVI. *Address delivered before the Rockland County Medical Society,* by its President, Dr. M. C. Hasbrouck. The subject of the address is a most important one, being a brief examination of the following questions: First, What are the scientific principles of the medical profession at the present day? Second, In what relation do they stand to practical medicine, or medical art? These questions are discussed with no little ability. The general conclusions of Dr. H. are throughout particularly sound.

Art. XVII. *Abstract of the Annual Address read before the Chenango Medical Society,* Jan. 12th, 1864, by Dr. J. T. Jameson. The theme of Dr. J. is the revolutions of medicine in the forward or backward direction. On this subject he speaks out boldly, and we think wisely and pertinently.

Art. XVIII. *Address before the Medical Society of the County of Albany,* by its President, Dr. H. Townsend. The subject discussed by Dr. T., is very nearly the same as that of the preceding address, though handled in a somewhat different manner, but leading to very similar conclusions. The following aphorisms embody important truths never to be lost sight of by the practitioner of medicine. "It is not the administering a medicine and withholding a stimulant, or prescribing a stimulant and withholding the medicine, which is to effect a cure, but it is the prescribing or withholding them judiciously, which is to bring about the favourable result.

"A medicine is anything that will cure, it is not necessarily a drug, nor is it necessarily a stimulant, but it is either one of these when judiciously employed, so as to combat or control disease.

"The effort of the physician to overcome disease should be, not to adopt a favorite theory, or follow a brilliant mode of practice, but to thoroughly prepare himself by cautious observation, reflection and study, so as to be enabled to decide upon the most philosophic and sensible course in the treatment not only of each particular disease, but of every modification of such disease, as it may differently present itself in different individuals."

Art. XIX. *On the True Indications for the Employment of Stimulants in Continued Fever.* By Dr. J. Hanbury Smith. A very sensible paper, but presenting few if any suggestions of an especially novel character.

Art. XX. *Therapeutics of Chloride of Ammonium.* By Dr. J. R. Leaming. In this paper Dr. L. presents us with a sketch of his experience in favour of the remedial powers of the muriate of ammonia in faceache, and other forms of neuralgia, in hemicrania, in the low muttering delirium observed in cases of typhus fever, in scarlatina, in sunstroke, in epidemic cholera, in croup, in diphtheria, in pneumonia and sub-acute pleurisy, in congestions of the brain, in the acute meningitis of children, in tubercular disease, especially of the lungs. In scarlet fever, cholera, croup, diphtheria, Dr. L. is in the habit of combining the muriate of ammonia with chlorate of potassa. We recommend the paper under consideration to the attention of our readers. From a very extensive use of the muriate of ammonia in the diseases of the throat, and of the respiratory membrane generally, we hold it to be one of our most effective remedies in these complaints.

Art. XXI. *On the Use of Bichromate of Potassa in the Treatment of Diphtheria.* By Dr. J. G. Orton. The doctor gives a list of 142 cases of diphtheria treated by the remedy, with only one death in a patient which had for six days previous to Dr. O.'s visit been under treatment by a homœopath. His usual prescription was four grains of the bichromate of potassa in four ounces of pure water, given in doses of from one-half to a whole teaspoonful every thirty minutes, or until vomiting is induced, when it is to be given every two hours. Patients under this treatment, we are told, usually recover in from three to ten days.

Art. XXII. *On The Mutually Antidotal Properties of Opium and Belladonna.* By Dr. H. S. Downs. The paper contains no original observations in confirmation of the reciprocal antidotal powers of these two substances. The writer says that he has witnessed the exhibition of such powers, but adduces only the observations and experiments of others in respect to the subject.

Art. XXIII. *On The Action of Mercury upon the Liver.* By Dr. J. L. Brown. The following are the general conclusions to which Dr. B. believes the facts adduced by him lead: "We have seen," he remarks, "in the first place, that the direct experiments of five different observers all tend to show that mercury does not increase the flow of the bile, but, on the contrary, rather diminishes it. We have found, in the second place, upon examining the symptoms, and post-mortem appearances, in those exposed to the full action of this metal, that there is no evidence to show that the liver is ever involved, or that the secretion of bile is in any way affected. We have found, in the third place, that the evidence generally adduced in proof of the specific action of the mercurials upon the liver, is fallacious; that the stools may present a bilious hue when there is no bile present; that they may be deficient in color when there is no hepatic derangement. In fine, that any conclusions drawn from a mere ocular inspection of the feces are entirely unreliable."

Art. XXIV.-XXV. *Mortality of the City of Rochester* for 1863, by Dr. H. H Langworthy. *Mortality of the City of New York*, by Dr. Cyrus Ramsay. Both of these are valuable statistical papers; the latter especially, in which are presented the mortality statistics of one of our most populous and crowded cities, for a series of years, and the ratio of the deaths to the population compared with that of the chief cities of the United States and of Europe. We are furnished with tables, showing the gross number of deaths per week, for ten years, from 1853 to 1864; the deaths per week of adults and those of children during the same period—and the weekly deaths, also from diarrhœa. Then the deaths in adults, children, and infants, under one year of age, during different months and seasons, and from different diseases. Neither of these papers admit of any very satisfactory or useful analysis. The same remark may be made also in reference to the next paper—namely:—

Art. XXVI. *Summary of Seven Daily Observations of the Temperature, Moisture, Weight, Direction, and Condition of the Atmosphere for the Year* 1863, kept at the Eastern Dispensary, New York City. By Dr. J. P. Loines.

Art. XXVII. *Report of Committee on Medical and Surgical Statistics.* By Dr. J. G. Orton. This report is one of progress, with the reasons for the non-appearance this year of a digest and classified tables of the medical and surgical observations of the profession in the several counties of New York.

Art. XXVIII. *Report of a Committee to confer with the Governor and Legislature of New York*, in relation to the additional care of the sick and wounded soldiers from the State in the United States service, with the act of the Legislature providing for such additional relief, passed April 24, 1863.

Art. XXIX. *Report on the United States Pharmacopœia* of 1860. By Dr. Edward R. Squibb, one of the Committee of Revision and Publication. This report presents a very full and most interesting exposition of the changes and revisions which occur in the last centennial edition of the Pharmacopœia, and the reasons which influenced the committee in their adoption. It admits of no analysis.

Art. XXX. *Regimental Surgeons of the State of New York* in the war of the rebellion, 1861–4, alphabetically arranged. By Dr. Sylvester D. Willard. The table gives the names, ages, place and date of graduation, term of practice, where and when appointed, and the changes which have occurred in respect to them; their deaths, resignations, dismissals, etc., and their present official relations.

Art. XXXI. *Extra Uterine Fœtation.* By Dr. O. G. Badlan. The case related by Dr. B. is not without interest. The actual source of the teeth, masses of hair, etc., occasionally found in abdominal tumors, is involved in much obscurity. The facts heretofore collected in respect to their origin throw but little light upon the subject. The doctrine which attributes them to an imperfect effort at fœtation without the uterus is the most plausible, and yet there are many difficulties in the way of its implicit adoption.

The remaining articles, after the announcement of the subject proposed for the prize essay of 1865, are occupied by notices of deceased members, abstract of proceedings of the annual session of 1864, lists of honorary and permanent members, honorary graduates of medicine upon the recommendation of the society, persons eligible for membership, permanent and honorary, etc. etc.

D. F. C.

ART. XIX.—*Reports of American Hospitals for the Insane:—*

1. *Of the State Lunatic Hospital, at Worcester, Mass., for the fiscal year* 1862–63.
2. *Of the Butler Hospital, for the year* 1863.
3. *Of the State Lunatic Asylum, Utica, N. Y., for the year* 1863.
4. *Of the (U. S.) Government Hospital, for the fiscal year* 1862–63.
5. *Of the Southern Ohio Lunatic Asylum, for the fiscal year* 1862–63.
6. *Of the Longview Asylum, for the fiscal year* 1862–63.
7. *Of the Boston Lunatic Asylum, for the years* 1859, 1860, 1861, 1862 *and* 1863.

1. THE report for the fiscal year 1862–63 of the trustees of the *State Lunatic Hospital*, at Worcester, Mass., contains a history of that institution, one of the oldest State charities of the kind in the country. The report of the Superintendent is, as usual, one of the most elaborate of its kind; but it does not contain so much matter adapted to our wants, as a provider for the Journal, as some of its predecessors.

	Men.	Women.	Total.
Patients in hospital Oct. 1, 1862	200	196	396
Admitted in the course of the year	114	101	215
Whole number	314	297	611
Discharged, including deaths	117	95	212
Remaining, Sept. 30, 1863	197	202	399
Of the discharged, there were cured	51	53	104
Died	16	14	30

"Of the deaths which occurred during the year, six were from general paralysis, nine from consumption, six from epilepsy, two from exhaustion, consequent upon maniacal excitement, and two from general decay of the vital powers and a premature old age, and two others, females, died without any apparent disease. They were each nearly ninety years of age."

Dr. Bemis writes as follows upon the subject of medical treatment:—

"The use of the warm bath, an occasional purgative and sedative, have been of service in producing quiet and repose in the early stages of acute mania, and in the paroxysms of periodical mania; while cold sponge baths, tonics, stimulants, and above all good diet, and active out-door exercise, have been found to give great relief to patients suffering from chronic mania. Cod-liver oil and stimulants have, in some cases, raised the standard of health in demented patients of feeble constitutions, where there was sluggishness of circulation, coldness of the extremities, and lividity of the surface."

Since the beginning of the war, and the consequent appreciation in price of all the articles of household consumption, the subject of the employment of the insane has attracted more attention and been more discussed, in some quarters, than at any anterior time. At the Worcester Hospital especial efforts appear to have been made to carry the system of labour to its utmost practicable extent, but Dr. Bemis states that "all the work performed by the patients is of an unsteady character, requires constant assistance and oversight, and is of a quality that no manufacturer or employer would be willing to purchase at any price."

We take a brief extract from the remarks upon moral treatment:—

"During the winter season, we had a series of about twenty lectures, several concerts of sacred music, and weekly parties for social entertainment, at which both sexes mingled freely with their attendants in games and in conversation, until nine o'clock in the evening."

2. The general statistics of the *Butler Hospital for the Insane*, for the year 1863, are as follows:—

	Men.	Women.	Total
Patients in hospital Jan. 1st	65	67	132
Admitted in course of the year	22	15	37
Whole number	87	82	169
Discharged, including deaths	19	20	39
Remaining, Dec. 31st	68	62	130
Of the discharged, there were cured . .			9
Died			8

"There seems to have been a prevalent idea in the community," says Dr. Ray, "that the war must necessarily produce a considerable increase of insanity; and much surprise has been excited by the fact that the records of our hospitals furnish little, if any, support to this impression. The loss of property, the loss of friends, apprehensions of trouble, excitement and depression, hardship and exposure—the common incidents of war—seemed to be the very things most calculated to affect the reason; and acting on such a tremendous scale as they have, the last two or three years, a corresponding amount of evil was expected. Now, although such anticipations have not yet been fully confirmed by the event, yet it can hardly be denied that those incidents have acted, within that period, to some extent, as exciting causes of mental disease. They have told upon the mental health, not so much in the shape of overt insanity, as was expected, as in that of a morbid erethism which becomes the germ of disease to be developed hereafter. All our knowledge of morbid action warrants us in believing that the deteriorating influences of this great struggle upon the qualities of the brain, will be witnessed not so much in the present as in the next generation. The apprehension of a large increase of insanity arose from a common mistake respecting the origin of insanity, and especially the relation between outward occurrences and the springs of cerebral activity. Briefly speaking, the mistake consisted in supposing that insanity is generally the effect of some profound emotion, or serious bodily ailment—overlooking those organic conditions from which chiefly those events derive their power to harm."

From this position as a starting point the doctor proceeds through the remainder of the report with an essay upon the etiology of insanity, especially in its relations to hereditary predisposition. The deductions from his argument may be understood by a perusal of the following extract:—

"The course of our inquiry, then, leads us to this conclusion—that in the production of insanity there is generally the concurrence of two classes of agencies, one consisting in some congenital imperfection of the brain, and the other in accidental, outward events. I do not say that mental disease is never produced by the latter class of agencies exclusively. The present limited state of our knowledge forbids so sweeping a conclusion. Cases sometimes occur where the closest investigation discloses, apparently, no cause of cerebral disorder within the patient himself. There is good reason to believe that the number of such cases would be lessened by a deeper insight into the inner life and a minuter knowledge of those organic movements which lead to disease. We know that even in those cases in which, to all appearance, the casual incident was most competent of itself to produce the disease, the constitutional infirmity may be often discovered. Drunkenness, epilepsy, blows on the head, sunstroke, would seem capable, if anything outward could, of producing insanity; but as a matter of fact, we find, not unfrequently, behind these casual events, firmly seated in the inmost constitution of the brain, the hereditary infirmity. Can we believe that it took no part in the morbid process?

"The almost universal conjunction of these two classes of agencies being admitted, it becomes us to thoroughly understand and profit by the fact, for this, like most facts on the subject of insanity, may be turned to practical account. It might seem, at first sight, that the presence and predominance of the constitutional defect implied a kind of fatality in the course of things, which it would be useless to attempt to resist. That there may be occasionally, some ground for this idea, it would be wrong to deny; but in a large proportion of cases, the morbid element is not so potent as to be entirely beyond control. The peril being understood, it may be kept in abeyance by avoiding all those incidents and influences which are calculated to bring it into active operation, and faithfully complying with the proper rules of living."

3. The following numbers represent the general results of the operations of the *State Lunatic Asylum*, at Utica, New York, for the year ending November 30th, 1863:—

	Men.	Women.	Total.
Patients at the beginning of the year . .	262	252	514
Admitted in course of the year . . .	151	136	287
Whole number	413	388	801
Discharged, including deaths . . .	146	121	267
Remaining at the end of the year . . .	267	267	534
Of the discharged, there were cured . .	36	44	80
Died	27	15	42

Causes of death.—Phthisis pulmonalis, 8; general paresis (*paralysie générale*), 10; exhaustion from mental disease, 10; epilepsy, 4; old age, 3; convulsions, 2; congestion of the lungs, cerebro-spinal meningitis, syncope, peritonitis, and suicide by suspension, 1 each.

In allusion to the cases admitted, Dr. Gray says:—

"Each year demonstrates, more and more conclusively, that the true pathology of mental disorders is to be sought in physical enfeeblement. That the disease is dependent on conditions of more or less exhaustion of the vital forces. In treatment, this fact is kept constantly in view. Therefore, we urge earnestly upon the medical profession the husbanding of these forces in the earlier stages of the disease, in which the patients come under their care; especially the avoidance of all depletives, whether by dieting, purgatives, or bleeding. If any one thing has been thoroughly demonstrated by the progress of medical science, within the past half century, it is the unquestionable importance of sustaining nature under all forms of disease, whether it be where medical or surgical art can aid, by the removal of appreciable or tangible causes, or where the physician stands only as the instructed guardian of the recuperative powers. This being true, it is not strange that we should annually urge this point, and be anxious to receive patients before the vital forces are so far exhausted that the organism is depressed beyond the influence of recuperative agencies; and the unhappy sufferer, deprived of the chances of complete, or even partial restoration, is doomed, unjustly and unnecessarily, to a life of disease. If insanity is thus understood to be pre-eminently dependent on devitalization, why still repeat and urge these points? Of those admitted this year, labouring under acute maniacal disease, caused by exhaustion, several had been bled, some of them repeatedly, while others had been put on low diet, and douched and purged, all under the direction of physicians. While professional men continue such practice, it is no more than our duty to remonstrate and call attention to its evil consequences."

It will be perceived that the foregoing is in accordance with the doctrine, in regard to insanity, which we have advocated, in these notices and elsewhere, for nearly twenty years.

Some interesting results of an analysis of all the cases received at this hospital since it was opened, are published in the report. A part of them are embodied in the following extract:—

"Since the opening of the institution in 1843, there have been 538 persons readmitted. Twice under treatment, 400; three times, 95; four times, 32; five times, 6; six times, 5. In the general tables of statistics of insanity in the institution, those 538 persons make a total of 1,273—an error in the supposed number of insane persons, of 735. Deducting these readmissions from the total of admissions in twenty-one years, and the 58 not insane, we have the true number of insane persons treated in the asylum, 6,123, instead of 6,916, as represented."

In regard to the results of treatment, in the patients who were readmitted, the report proceeds to show that "we have, in 538 *persons*, 662 *recoveries*, 207 improved, 277 unimproved, 61 deaths, and 66 remaining in the asylum."

These results exhibit some of the sources of error in deduction, which have several times been mentioned in our "notices" as pervading nearly all of the American statistics of insanity.

In the further analysis, made for the purpose of ascertaining the bearing of the cases treated at this hospital upon the subject of causation, we think the general tenor of the language gives the impression that, to a greater extent than is real, it was left to the hospital at Utica to demonstrate that, in the production of insanity, physical causes predominate over moral causes. In relation to this subject, we have just looked over some of the old reports of four American hospitals. At one of these hospitals nothing was said upon the subject; at the second (Worcester), Dr. Woodward, in 1839, in speaking of all the cases hitherto admitted, says: "There have been *four hundred and ninety-eight* cases arising from physical causes, and *three hundred and twenty-four* from moral causes." Thus *a fraction more than three-fifths* of the whole are attributed to physical causes. At the third hospital, that at Columbus, Ohio, which antedated that at Utica by several years, physical causes predominated over moral causes from the beginning. At the fourth—Bloomingdale, New York—the writer of this article wrote, in the report for 1844, less than two years after the opening of the hospital at Utica, as follows: "Nearly all the older authors agree in the opinion that, of the two classes of causes, the mental are more frequently productive of insanity than the physical. *From more recent observations it has been made to appear that the reverse of this proposition is the fact;*" and in the table of causation relative to the patients admitted in that year (1844), fifty-nine cases, or a little *more than three-fifths* of the whole, are alleged to have originated in physical causes, and but 36 in moral causes.

Dr. Brigham was an extremist upon the subject in question, to such an extent that his opinions upon it do not represent the opinions of the other superintendents of American hospitals twenty years ago. As one proof of this we will take some of the statistics of the Utica Hospital itself. Of the 2,376 patients admitted prior to the report of 1848, the last which Dr. Brigham wrote, only *nineteen*, or *four-fifths of one per cent.*, are attributed to masturbation; while of 367 admitted in 1849, and reported by Dr. Benedict, Dr. Brigham's successor, *fifty-three*, or *more than fourteen per cent.*, are assigned to that cause. The reason of this remarkable difference is simply that, in most of the cases regarded by Dr. Benedict as the product of masturbation, Dr. Brigham would have attributed the disorder to some mental or moral cause.

The subjoined remarks of Dr. Gray upon the power of the will among the insane will be read with interest, particularly by those who believe that power to be wholly destroyed by insanity.

"Self-control is utterly lost in but a very small proportion of the insane. The patients in any well-regulated asylum are properly held to a measure of responsibility. To ignore the fact that they have a good degree of self-control, and act on the assumption that they are entirely irresponsible, would be the abandonment of all healthful discipline, the removal of the strongest inducements to good conduct and the maintenance of self-respect. It is our constant aim to treat patients as men and women, to urge the cultivation of self-control, to impress the important duty of such conduct and conversation as will promote self-respect and due respect for others, and proper regard for the proprieties of life. * * * We find freedom of will weakened but not destroyed. Among the ordinary patients in an asylum one would look in vain for entire irresponsibility. There are, of course, exceptional cases."

4. It was a fortunate thing for our general government, as well as for our soldiers and seamen, that the *Government Hospital for the Insane* had been

established, and was in successful operation at the beginning of the deplorable war in which we are now engaged. In a former notice we showed, by the statistics of that hospital, how rapidly the numbers of its inmates, chiefly derived from the army and the navy, had increased since the advent of the year 1861. In the report before us, which covers the period between the 30th of June, 1862, and the 1st of July, 1863, Dr. Nichols says: "The number of admissions in the course of the last two fiscal years has increased, each year, nearly one hundred per cent. The admissions in 1860–61 were ninety-five (95); in 1861–62, one hundred and eighty-five (185); and in 1862–63, three hundred and fifty-seven (357). There having been only seven readmissions in the same time, the number of persons treated was only seven less than the number of cases."

	Men.	Women.	Total.
Patients in hospital June 30, 1862	147	65	212
Admitted in course of the year	332	25	357
Whole number	479	90	569
Discharged, including deaths	277	14	291
Remaining, June 30, 1863	202	76	278
Of the discharged, there were cured . . .	198	6	204
Died	57	4	61

Causes of death.—"Chronic, organic, and functional degeneration of the brain, without other complicative or supervenient disease before death, 18; chronic, organic, and functional degeneration of the brain, with epilepsy, 5; ditto, with serous apoplexy, 2; with chorea, 1; with *paralysie générale*, 1; with abscess of brain, 2; with tumour of brain, 2; with tumour of heart, 2; with fatty degeneration of heart, 1; with typhoid fever, 1; with dysentery, 4; with hemiplegia, 1; with diarrhœa, 2; with variola, 1; from maniacal exhaustion, 1; scrofula, 1; diarrhœa, 1; dysentery 3; typhoid fever, 12."

The general interest in most of the topics mentioned in the following extract, is a sufficient justification for its length.

"The department of the interior will learn with interest, we doubt not, that the number of the insane received into this hospital during the year under review, was greater than the greatest number ever received in the course of any one year by any other one institution on this continent; also, that owing to the immense armies and very large naval forces with which the war has been, and still is, prosecuted, and the specific sources from which our patients are mainly derived, a larger proportion of the cases received were affected with acute forms both of mental derangement, and of idiopathic bodily disease, than were ever before, in the course of one year, admitted into any one establishment on the globe.

"It should not be inferred that the war has been a prolific *moral* cause of insanity, either among the men of the land and naval forces waging hostilities against the common enemy, or among civilians of either sex or of any class. In not more than two per cent. of the four hundred and ninety-three (493) cases received from the army and navy since the war began, has even the exciting cause of mental disorder appeared to have been either the profound excitements attending a personal participation in active military hostilities prosecuted on the largest scale, a sense of great personal danger in battle, or anxiety and misgivings respecting the result of a great contest, in which every man of much moral susceptibility feels the deepest personal stake.

"The existence of more or less home-sickness among the national troops—perhaps the most pardonable weakness which a citizen soldier in the field can display—has been rendered evident by the character of the morbid mental manifestations exhibited by several of our army patients.

"Excepting a small proportion of cases caused by intemperance, cranial injuries, tumours, and other organic cerebral affections, necessarily sooner or later disturbing the mental manifestations, the insanity which occurs among the volunteer and other soldiers drawn from high temperate latitudes, campaigning in the lower latitudes of the same zone, appears to us to be, in most instances, one of the extreme consequences of a depression of the vital forces. The best constitutions are subject to such *sthenic* diseases as pneumonia and acute rheumatism, but, with the exercise of a fair amount of prudence, they are often invigorated from the first by active service in the field. The weaker of the men, uninured to a soldier's life, are overmatched by the privations, exposures, and fatigues of active service. Especially when serving in a malarial region, they first become thin and enfeebled, and then, upon some extraordinary exposure or fatigue in such a state of debility, there supervenes either an intestinal flux or a low form of fever, sometimes both as distinct diseases. It is in the course or at *the close* of this series of agencies, which impair the strength and tone of the nervous system, that unsound mental manifestations begin to exhibit themselves.

"Most of the great political and social convulsions that have occurred in the course of the modern history of enlightened nations, have been attended with a manifest increase of insanity among the peoples most affected by such upheavals of society; but contrary to the anticipations which history authorized us to entertain at the outset of the struggle, the admission of civil cases into this hospital, situated in the very midst of the perturbations of the war, has been fewer during the last two years than before. We find that this exceptional feature in the domestic strife of arms in which we are engaged, is noticed by the medical directors of the two largest institutions in the loyal States.

"This important exception to the teachings of previous history cannot be accidental. It has been too uniform and too long continued for that to have been the case. It must be due to some peculiarities either in the character of our people, or in that of the war itself."

5. The next report in our list is that of the *Southern Ohio Lunatic Asylum* for the fiscal year 1862–63.

	Men.	Women.	Total.
Patients in hospital Nov. 1, 1862	76	85	161
Admitted in course of the year	47	44	91
Whole number	123	129	252
Discharged, including deaths	47	42	89
Remaining, Nov. 1, 1863	76	87	163
Of the discharged, there were cured	30	29	59
Died	8	6	14

Causes of death.—Mania, 3; consumption, 3; paralysis, 2; apoplexy, 2; epilepsy, 1; pneumonia, 1; ascites, 1; marasmus, 1.

The whole number of patients received at this hospital since it was opened, and of whose insanity a cause was assigned, is 755. In treating of the etiology of insanity, Dr. Gundry shows that in 666, or 88 per cent. of these cases the disorder was attributed to but *ten* general causes. He further shows that of 17,492 cases treated in seventeen hospitals of the United States, no less than 15,069, or 86 per cent., were alleged to have had their origin in the same generative agents. We here combine the two tables.

	Dayton Hospital.	Seventeen hospitals.
Ill health of various kinds	211	4,915
Intemperance	72	1,764
Grief at loss of friends, and anxiety	44	1,746
Religious excitement	51	1,399
Domestic trouble	71	1,112
Puerperal conditions	82	1,050
Masturbation	37	1,042
Pecuniary difficulties	42	872
Disappointed affection	42	592
Excessive mental application	14	577
Total	666	15,069

"The similarity of the results," says the report, "is remarkable. If we take the statistics furnished by individual hospitals, the results will differ in one or two particulars, from the influence of the situation and circumstances peculiar to the institution, but will, in the main conclusions, show a striking accordance. Whatever errors in the details may have crept into these tables, the number of cases taken is so great, and the facts are derived from such different and numerous sources, that they can hardly affect the main results, and the conclusion is therefore inevitable, that whatever may underlie the production of insanity, these phenomena stand out so boldly in the history of its early stages, as to be the most prominent points that fixed the attention of vast numbers of independent observers who were searching for the causes of insanity in the cases they were connected with. These agencies, detached as we have seen from all other classes of causes, as the leading forces in the starting of insanity, are widely different in their character, yet since they are so often seen attendant upon—certainly antecedent to—and probably causative of the same result upon the mind, they would probably possess some qualities in common. They differ widely: some belong to the class of physical forces, whose action upon the body is known and cognizable; others to moral forces, whose operation upon the body is not so well ascertained or so easily appreciable. They possess alike a few striking characteristics. They tend to depress, either directly or indirectly, the physical powers of the body, to impair its vital energies, and disturb the proper exercise of its nutritive functions. They agree also in the slow, gradual, and insidious manner in which they accomplish their task. None of them overwhelm the victim by one blow, but by slight and repeated attacks, by the unremitting use of apparently feeble means."

In two instances in the course of the year, the alleged cause of mental disorder was "war excitement."

An excellent pair of magic lanterns, together with some slides, were purchased in the course of the year, and exhibitions of pictures and dissolving views were given to the patients.

6. Dr. Langdon, of the *Longview Asylum*, presents the following summary of the records of that hospital for the fiscal year 1862–63.

	Men.	Women.	Total.
Patients in hospital Nov. 1, 1862	169	177	346
Admitted in course of the year	79	51	130
Whole number	248	228	476
Discharged, including deaths	69	51	120
Remaining, Oct. 31, 1863	179	177	356
Of the discharged, there were cured	49	29	78
Died	10	12	22

Died of phthisis pulmonalis, 11; general paralysis, 4; erysipelas, 2; epilepsy, peritonitis, general anasarca, fatty degeneration of the heart, and chronic enteritis, 1 each.

We take from this report a part of the section devoted to moral treatment. "We think it a fact established beyond dispute, that a deranged person who is obliged to submit to a certain degree of restraint in a well regulated asylum, has a tenfold better chance of a speedy recovery, than one who is allowed to pursue all the dictates of a disordered fancy, unchecked by authority and discipline. With, therefore, a view to the cure of our patients, we regard restraint, under some modification or other, as of primary importance. And even in those instances where the disease has passed beyond the hope of cure, it is still of great value to the well-being of the patient, and to those who are about him.

"In our government of the asylum it is still a matter of prime consideration with us to keep as many as possible of the inmates engaged in some light and useful occupation. We have generally about two hundred of these people thus engaged, and the results have been highly beneficial not only in an economical point of view, but so far as the patients themselves are concerned. And upon them such occupation is eminently curative. When kept well at work the consequences are greater tractability in the wards, more refreshing sleep at night, and an earlier manifestation of the signs of returning intellect. In certain cases that are of paroxysmal type we have often seen the simple expedient of keeping the parties so afflicted pretty constantly engaged, postpone the fit for many days and even weeks, and generally render it milder and of shorter duration.

"While we attach so much importance to the physical treatment of our patients, we are at no time unmindful of their moral management, and have endeavoured, as far as possible, to substitute the old instrumentalities of chains, hand-cuffs, strait-jackets, confinements, composing chairs, &c., by music, the dance, pictures, the songs of birds, and the games of ten-pins, billiards, chess, and checkers. Few persons are insensible to the concord of sweet sounds, the poetry of paintings or of motion, and the insane as a class are not an exception. Many a time we have been gratified and instructed by the potent influence of these agencies. We have seen them break the spell of profoundest melancholy, calm the turbulent spirits of the maniacal, call back by their magic influence the lost memory of brighter and happier days, soothe many an aching heart, and shed light upon the darkened mind where no means seemed competent to cure."

7. Until recently, we have received no report from the *Boston Lunatic Hospital* since the year 1852. We now have those for the five years next preceding 1864. The general statistics obtained from them are as follows:—

	Men.	Women.	Total.
Patients in hospital January 1, 1859 . .	59	64	123
Admitted in course of the year . . .	56	40	96
Whole number	115	104	219
Discharged, including deaths . . .	43	37	80
Remaining, January 1, 1860	72	67	139
Of the discharged, there were cured . .	24	15	39
Died	6	15	21
Admitted in 1860	66	60	126
Whole number	138	127	265
Discharged, including deaths . . .	64	34	98
Remaining, January 1, 1861	74	93	167
Of the discharged, there were cured . .	33	19	52
Died	21	8	29
Admitted in 1861	59	51	110
Whole number	133	144	277
Discharged, including deaths . . .	46	38	84
Remaining, January 1, 1862	87	106	193
Of the discharged, there were cured . .	26	20	46
Died	11	5	16
Admitted in 1862			98
Whole number			291
Discharged, including deaths . . .			119
Remaining, January 1, 1863	87	85	172
Of the discharged, there were cured . .			43
Died			22
Admitted in 1863	34	47	81
Whole number	121	132	253
Discharged, including deaths . . .	45	36	81
Remaining, January 1, 1864	76	96	172
Of the discharged, there were cured . .			38
Died			16

Of the 104 deaths in the five years there were from consumption, 26; paralysis, 18; epilepsy, 11; softening of brain, 11; exhaustion, 7; apoplexy, 6; typhomania, 3; delirium tremens, 2; marasmus, 2; acute mania, 2; disease of heart, congestion of lungs, tumour, dysentery, senile gangrene, pericarditis, Bright's disease, fever, congestion of lungs, chronic diarrhœa, accidental drowning, lung fever, brain fever, suicide, pleurisy, and peritonitis, 1 each.

Since this hospital came under the care of Dr. Walker it has been greatly improved. Its apartments have been made more commodious and comfortable, and the means for exercise, recreation, and amusement have been much enlarged. A billiard table and a bowling alley have been supplied; and dances, concerts, and other assemblies for entertainment have been introduced.

In his report for 1861 Dr. W. says: "About the middle of September we were surprised, one morning, by the appearance of some twenty cases of diarrhœa among the patients. But by immediately washing out all the soil-pipes and drains, and increasing our fires (which it is our custom to light as soon as the nights begin to be damp), so as not only to warm but to thoroughly dry the atmosphere of the halls, all traces of it were removed in the course of thirty-six hours."

The following very just observations in regard to cases of delirium tremens or habitual intemperance are from the same report:—

"All of them are unsuitable cases for treatment in a hospital for the insane. They demand and should have privileges which it is difficult to afford them without creating excitement and discontent among the other patients. Moreover, wholly unable to see insanity in those most troublesome and difficult cases in which the experienced eye alone can detect the insidious evil, they foster, by their conversation and influence, that restlessness under necessary and wholesome restraint, and that suspicion of the motives of those who have the charge of them, which are among the greatest obstacles to the successful treatment of the insane."

In the report for 1862 it is said that "hitherto the excitement consequent upon the civil war has been rather of a healthy, tonic nature in this community, so far removed from the immediate contest and its attendant horrors. Its influence as an exciting cause of insanity has thus far hardly equalled that of most other general excitements." Dr. Walker thinks that after the contest is over, "then will be felt, in full force, the prolific influence of the present war upon the mental health of our people."

Among the patients of the year last mentioned were three soldiers from the U. S. Volunteers. P. E.

ART. XX.—*A System of Surgery. Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M.D., Professor of Surgery in Jefferson Medical College, Philadelphia. Illustrated by over thirteen hundred engravings. Third edition, much enlarged and carefully revised. In 2 vols. 8vo., pp. 1049 and 1087, with a full Index. Philadelphia: Blanchard & Lea, 1864.

THE exhaustion, within the last five years, of two large editions of the *System of Surgery* by Prof. Gross has fully verified our prediction in regard to its probable success, in view of the need of such a work, which we then believed to exist, even before the occurrence of our national contest, which has since converted so many peaceful practitioners of medicine into students of surgery or active military surgeons. This gratifying evidence of approval of his labours has stimulated the distinguished author "to increased exertion to render the work still more useful as a faithful exponent of the existing state of the science and art of surgery."

Upon the present edition "upwards of two years and a half of arduous labour have been expended. Every chapter has been thoroughly revised; the text has been augmented by an amount of matter nearly equal to two hundred pages; and a considerable number of new woodcuts, nearly all expressly prepared for the purpose, have been introduced. Many portions have been entirely rewritten, and every effort has been made to condense the language; while an enlargement in the form of the work has prevented an increase in the number of pages. The general arrangement is the same as in the previous imprints; and the additions, for the most part widely scattered through the text, are essentially of a practical character."

The result of the thorough treatment, just described in this quotation from the author's preface, is evident enough, upon a slight inspection of his work, in a very great improvement on the previous editoins. We have carefully examined the two volumes, from chapter to chapter and through many pages in succession, and are sincerely pleased to find that the usefulness of Dr. Gross's "System," as "a faithful exponent of the existing state of the art and science of surgery," is increased to such an extent as to render it not only by far the best text-book on the subject, as a whole, within the reach of American students, but one which will be much more than ever likely to be resorted to and regarded as a high authority abroad. We may say, further, that the progress hitherto made in the successive editions under the able and conscientious endeavours of the author, especially with the advantage of his constantly augmenting experience and that of his confrères in civil and military practice, gives us strong encouragement to hope that it may eventually become, for the purposes of teaching, a really cyclopædic compend, equal to any of its kind in any language, as it already bids fair to be in our own tongue.

There are still some peculiarities of nomenclature which we should be glad to see abandoned, as neither essential nor established; and there is another defect of much greater importance which we still hope to find removed, at least to some reasonable extent, in future editions. This is the absence of references, where names and dates as well as other matters of interest are mentioned. The necessity for these references in every work of scientific authority, above the grade of an elementary schoolbook, is too well understood to require any comment.

A great deal of time and care must have been bestowed upon the preparation of the index, which is an indispensable and characteristic feature of this, as of all other similar publications of the present day; but this index, invaluable as it is in facilitating the study of the contents of these closely printed volumes, possesses, we conceive, incomparably less scientific and practical value than would the specific references from page to page, which might be furnished with the aid of a proportionate amount of far more agreeable and edifying industry. This question of references is paramount, with the majority of students in these days of independent thought and inquiry; and hence, by the amount of our author's attention to the inevitable demands of his most influential readers, must the utility of his work, as a faithful record of other men's views and experience, in addition to his own, be estimated.

In regard to the changes that have been made by omissions, additions, condensation, rearrangement and other emendation, which have so greatly improved the general character of the work, we have found them, as the preface truly says, so numerous and so generally diffused that it is difficult to specify them to any practical advantage. We may say honestly, and do so with great pleasure, that these volumes of Dr. Gross evince a wonderful advance beyond the text-books of former days as demonstrators of the theory and practice of surgery and indicators of the progress of these branches. The surgical experience of the present bloody war is not forgotten, nor are the accumulating results of this terrible experience, which already promise to be unequalled in extent if not in importance, likely to be disregarded in the future by our indefatigable author. We cordially wish him a long continuance of the successful career which he has so zealously and so ably pursued.

The publishers are entitled to our especial thanks for the manner in which the work has been produced, in these days of high wages and costly materials. With very few exceptions, the new and old woodcuts are excellent, some of them being unusually good even among many which had already enhanced the reputation of this department of the work as the best of its kind in the country, and as worthy of adoption even in the wider field of competition on the other side of the Atlantic. E. H.

ART. XXI.—*Therapeutics and Materia Medica. A Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History.* By ALFRED STILLÉ, M. D., Professor of the Theory and Practice of Medicine in the University of Pennsylvania, etc. etc. Second edition, revised and enlarged, 2 vols. pp. 776, 819. Philadelphia: Blanchard and Lea, 1864.

IT is only a little more than four years since we had the gratification of noticing the appearance of the first edition of Dr. Stillé's work on Therapeutics and Materia Medica. A second edition has been recently published. This fact, especially when we consider the size of the work, two volumes of about eight hundred pages each, is perhaps the best evidence of its value, and the most satisfactory compliment to its author. It requires some courage on the part of a publisher, to send forth two such portly volumes, in times like these, when the price of labour and material is so largely enhanced. We are sure that Messrs. Blanchard and Lea, liberal as they are in their catering for the medical profession, would have deferred the publication of the second edition of Dr. Stillé's work to easier and brighter times, if they had not been well assured of a demand for it. We are glad that the demand exists. It is a proof that the intelligence of the medical profession, in this country, is such as to require for their use handbooks of the most comprehensive character.

The present edition is gracefully dedicated to four of the author's professional friends. On the title-page it is described as "revised and enlarged." The character of the revision and enlargement is briefly described by the author in his preface to the second edition, as follows: "The nomenclature of the materia medica, and the formulæ for officinal preparations, have been made to conform to the recent edition of the Pharmacopœia, while a few medicines of minor importance contained in the first issue have been omitted. On the other hand, several new medicines have been introduced, and to almost every article important additions have been made. These, in the aggregate, amount to more than one hundred pages. The bulk of the work has not, however, been increased; on the contrary, by a new typographical arrangement, it has been considerably reduced. The indexes have been prepared entirely anew, and, it is believed, will be found to be more copious, as well as more systematically arranged, than in the first edition."

We do not propose to review Dr. Stillé's work at length. Our opinion of it was given to the public soon after the appearance of the first edition.[1] A further acquaintance with it has confirmed the favourable opinion we then expressed of it, and has also satisfied us of the justness of the criticisms we passed upon it. Since its first appearance, we have used it for reference in our daily professional labour, and have commended it to the favour of medical students and medical men. We can give no better evidence than this of the estimation in which we hold it.

Among the articles that are introduced into this edition and are not found in the first one, are oxalate of cerium, sanguinaria, elaterium, podophyllum, erigeron, oleum cadinum, and gossypium. They all possess a certain value, which renders them useful, and we are glad that Dr. Stillé has introduced them into his Materia Medica. His notice of the oil of cade is extremely brief, and scarcely conveys either a just notion of its therapeutical value, or of its various methods of application. Unless we are greatly mistaken, it is an agent upon which Hebra, whose authority in cutaneous diseases none will dispute, relies very largely for the treatment of a variety of affections of the skin. We were surprised not to find elaterium described in the first edition, and therefore welcome its introduction into this. A very good account is given of the physiological action of podophyllum, and its active principle, podophyllin, but its therapeutical virtues are "damned by faint praise." This, however, is better than the extravagant encomiums upon them which have appeared in some quarters. We are sorry that Dr. Stillé felt obliged to leave his statement of the prophylactic virtues of belladonna in scarlatina unchanged, or rather, that during the interval between the appearance of the first and second editions of his work, he did not find reason to alter his opinion, and consequently his statement with regard to it. We cannot agree with him on this point, and do not believe that the best observers in our profession do.

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[1] Vid. Am. Journal for April, 1860.

As we are not reviewing Dr. Stillé's work, it is time that we should bring our notice of it to a close. But we cannot do so without again commending it to the profession as a work of great value on materia medica and therapeutics, and one highly honourable to the literature of our country. E. H. C.

ART. XXII.—*Lectures on Venereal Diseases.* By WILLIAM A. HAMMOND, M.D. 8vo. pp. 287. Philadelphia: J. B. Lippincott & Co., 1864.

THESE lectures were prepared originally to be delivered before the students at the Baltimore Infirmary, in the year 1862. Five of them were published, in June and July of that year, in the *American Medical Times;* the others were never delivered, and have not before been printed. Those published were characterized by the clearness and distinctness with which the doctrines taught were exposed, so that a volume comprising the complete series was received with pleasure.

The author, in his preface says:—

"These lectures are not published as a complete treatise on venereal diseases. They fall far short of that point, and are not, therefore, to be classed with the excellent work of Dr. Bumstead, which is as complete in plan as it is sound in practice, and which covers all the ground a work of the kind can cover, and better, too, than any other volume on the subject with which I am acquainted. They are believed, however, to embody, so far as they extend, in a small compass, the main practical points of doctrine and treatment; and they contain some results, based upon my own observations, which are now first published, and which I think are of an important character.

"As they were originally intended to represent my own views, rather than to be made up of citations from other authors, I have not deemed it necessary to give, to any great extent, the opinions of others, except when I have adopted them as my own, or when they tended to clear up doubtful points. If the lectures contribute towards extending a knowledge of the important class of diseases to which they relate, they will accomplish the chief end which leads to their publication."

These lectures are twenty in number; fifteen treat of primary venereal ulcers and syphilis, and five of gonorrhœa. Describing these affections as they exist, and giving simply the opinions held by the author in regard to them, without stopping to discuss the views of others, and being written in a clear and easy style, they form an instructive volume.

Dr. Hammond teaches the duality of the venereal poison (p. 12); that the soft chancre is a local affection (p. 18); that the hard chancre alone infects the system (p. 62); that when the epidermis is intact, a chancre originates as a pustule; if it is abraded, as an excoriation (pp. 13 and 65); that the timely administration of mercury may prevent the formation of an indurated bubo after an indurated chancre (p. 74); that the *bubon d'emblée* is not impossible (p. 85); that the induration of a chancre is not the sign of infection already accomplished, but merely a part of the chancre itself (p. 261); and that the caustic plan of treatment of the indurated chancre may be practised with a reasonable prospect of success, if employed in the first six days after the appearance of the pustule, whether induration be present or not, while subsequently to that period the cauterization of an infecting chancre will generally prove unsuccessful, even if induration has not yet made its appearance (p. 88). On the subject of gonorrhœa he teaches that the virus of an infecting chancre, when deposited upon a secreting mucous surface, may give rise to an inflammation of that surface, attended with a muco-purulent discharge, without a chancre being necessarily formed, unless an abrasion exists; that the affection thus produced by the virus of the infecting chancre is a syphilitic gonorrhœa, that it is followed by constitutional manifestations, and is contagious; that the virus of a soft, non-infecting chancre, when deposited on a secreting mucous surface upon which there is no abrasion, generally gives rise to a muco-purulent discharge without the necessary production of a chancre, that the discharge is contagious, and that it is not followed by any specific constitutional symptoms; that the matter of each of these species of gonorrhœa will, when inoculated, give rise to its own particular form of chancre, but that greater care and longer contact are necessary than are required with the virus direct from the chancre; and that muco-purulent discharges from the urethra or vagina, due to other causes, are not contagious, and in nowise possessed of any specific characteristics. (p. 226 *et seq.*)

It will be seen that in many points, some of them highly important, Dr. Hammond differs from M. Ricord.

We ourselves, after a thorough study of the subject of venereal diseases, accepted the doctrines of Ricord, and we still hold them with unshaken confidence. We have not only studied his writings, but for three years heard his teachings and saw his practice at the Hôpital du Midi. To read that secondary symptoms are not contagious, or to hear a teacher say so, does not produce the same effect as to *see* a blistered surface dressed with lint that had been left to soak in a perineum full of *plâques muqueuses* heal as well as if dressed with lint spread with simple cerate. We have *seen* Ricord prove, and at the point of the lancet, all the doctrines he maintains that are contradictory to those advanced by Dr. Hammond, and have never seen, heard, or read anything to shake our confidence in them.

We hold that when a proposition has been proved by the kind of proof that belongs to it, any particular objection, *even one insoluble at the time*, should not be considered as disproving it. If no answer can be given, it only results that the two propositions held to be true are not contradictory, though we are unable to point out how they agree. The objections of Dr. Hammond to certain propositions of M. Ricord, which we must consider as proven, would not therefore be held by us as contradictory, even if we could imagine no solution to them. This, however, in no single instance is the case, for similar and parallel objections have been repeatedly made before, and always solved when proper opportunity was afforded. We will not argue upon any of the points in which we differ from Dr. Hammond, for we have no inclination, nor do we feel called upon, to repeat what has been said so often before.

As regards Dr. Hammond's understanding of the doctrines of Ricord, it is necessary to call attention to several statements in these lectures At page 119 Dr. H. says that certain experiments performed in France and Germany were the means of converting Ricord from the doctrine of the non-inoculability of secondary accidents. We have never understood that Ricord had been made to believe that secondary symptoms were ever *inoculable;* under certain circumstances—as, for instance, from a wet-nurse to a child—he teaches that they may be *transmitted.* At page 73, after stating that a soft chancre, when far advanced in the process of healing, is no longer capable of being propagated, Dr. Hammond adds that this view is contrary to that held by Ricord and his followers, who contend that a non-indurated chancre retains its virulent character to the last. On the contrary, Ricord himself says that during the period of reparation the pus becomes laudable, "as it may justly here be styled, for it ceases to be inoculable" (*Lettres sur la Syphilis*, page 160); and again, at page 269 of the same *Lettres*, he says that "the chancre at the period of reparation can no longer, *as I have already demonstrated and taught for twenty years*, furnish inoculable pus."

While differing with Dr. Hammond on many of the main points connected with the etiology and pathology of venereal affections, we can express our admiration of the clear and forcible manner in which his peculiar views are presented. His description of the various symptoms witnessed in constitutional syphilis is excellent, and the treatment advised for their relief is equally so.

The publishers of these lectures have spared nothing in the way of paper and of printing in the getting up of the volume. They have done their part in a manner worthy of all commendation. *Bubo d'emblé*, instead of *bubon d'emblée* (p. 85), is the only typographical error we have noticed. W. F. A.

ART. XXIII.—*A Comprehensive Medical Dictionary, containing the Pronunciation, Etymology, and Signification of the Terms made use of in Medicine and the Kindred Sciences. With an Appendix, comprising a Complete List of all the More Important Articles of the Materia Medica, arranged according to their Medicinal Properties. Also, an Explanation of the Latin Terms and Phrases occurring in Anatomy, Pharmacy, etc.; together with the Necessary Directions for Writing Latin Prescriptions, etc. etc.* By J. THOMAS, M.D., etc. 8vo. pp. 704. J. B. Lippincott & Co. Philadelphia, 1864.

To such as have just entered upon the study of any branch of science, the possession of a good technicological dictionary is important. It is especially so to the student of medicine. Even though he may enter upon his task with all the advantages of a complete classical education, ready to determine the etymology, and fix the primary meaning of the various terms he encounters, he would, nevertheless, be unable, in very many instances, to understand correctly their true technical application, without the aid of a medical lexicon, or a long course of laborious reading.

In preparing the volume before us, Dr. Thomas has had, evidently, constantly in view the especial wants of the medical novitiate in respect to a technical dictionary, and the means best adapted to meet them. It is true that the Dictionary of Dr. Dunglison, which forms so indispensable an appendage to our professional reading tables, embraces a very complete list of medical terms, with their etymologies, their definitions, and their synonyms. It is a work, however, of much wider scope than that of a mere lexicon—presenting under each of the leading terms embraced in it, "a condensed view of its various medical relations"—and in this manner furnishing a brief but very useful abstract, as it were, of the existing condition of the medical sciences. It is, confessedly, in every point of view, a very complete and valuable work of its kind, meriting to the fullest extent the character given to it by Dr. Thomas in his preface, where he pronounces it "alike admirable for its great accuracy, and its extraordinary completeness. As a work of reference for the physician as well as for the advanced class of students leaving nothing to be desired."

The work of Dr. Thomas is one of far less pretension; it is, nevertheless, within its more limited sphere, very well executed.

A prominent feature of the work of Dr. T. is the care that has been taken to note the correct pronunciation of each term. A common standard of pronunciation for medical words, based upon sound and generally recognized principles, is a desideratum. The discrepancies of pronunciation which exist among physicians of different localities, often, even of the same, is, to say the least of it, both embarrassing and annoying.

Dr. Thomas admits that in the preparation of his dictionary he owes great obligation to the labour of others. "His acknowledgments," he remarks, "are pre-eminently due to Mayne's *Expository Lexicon*. He also expresses important obligations to Gray's *Structural and Systematic Botany*, and *Manual of Botany*, to which he has had recourse as his chief authorities on all questions relating to botanical science. To Hoblyn's *Medical Dictionary* he is indebted for the matter of a number of articles, particularly those relating to chemistry. The notices of the natural orders of plants and animals have mostly been taken from the justly popular work, Brande's *Encyclopædia of Science, Literature, and Art*. Nor can we," he adds, "omit to mention our great and important obligations to Wood and Bache's *United States Dispensatory*, a work which justly ranks among the first of its kind that have ever been published in this or any other country."

It will be very evident to any one who will compare the work of Dr. Thomas with Mayne's *Lexicon* and *Medical Vocabulary*, that he has been mainly indebted to these for his general plan—his foundation and framework. He has added a feature wanting in the works referred to and in most other medical dictionaries, which is, a literal translation, whenever practicable, of the various Latin phrases, sentences, etc., which abound in medical technicality. "The importance of such explanations, in giving clear and definite ideas to those who may be unacquainted with the Latin tongue is too obvious to require to be enlarged upon."

The work of Dr. Thomas, besides its excellent vocabulary, embraces, also, many hints and observations calculated to facilitate an acquaintance with medical terminology, and its proper usage in writing and speaking. The value of much of the very copious appendix may, however, well be questioned. The omission of the greater part, if not all of it, would have the effect of diminishing the price of the volume, without, we think, detracting in any great degree from its value. D. F. C.

ART. XXIV.—*A Memorial of John C. Dalton, M. D. An Address delivered before the Middlesex North District Medical Society, April* 27, 1864. By JOHN O. GREEN, M. P., Lowell. 8 vo. pp. 35. Cambridge, 1864.

WE have presented to us in this address a brief sketch of the life of a very upright, conscientious, and highly esteemed member of our profession, and one who, by the faithful performance of all his duties, acquired the regard of a large circle of friends and of patients. It may be read with advantage by the junior members of our profession.

In a quotation from an autobiographical letter (p. 11), we notice some errors which it may be right to point out. This extract is as follows:—

"I entered my name, in the fall of 1815, as a student of medicine in the office of Dr. Josiah Bartlett, of Charlestown, attended two regular courses of medical lectures in Boston, and a third one during the winter of 1817–18, in the University of Pennsylvania, in Philadelphia, where I enjoyed the privilege of instruction from the master minds of such men as Caspar Wistar, Philip Syng Physic, John Syng Dorsey, Nathaniel Chapman, and James Dewees, having the melancholy distinction, as a member of the class from Massachusetts, of officiating as pall-bearer at the funeral of the last named, who died before the expiration of the course."

There are several mistakes in this quotation which, for the truth of history, we shall correct.

Dr. Dalton could not have enjoyed the privilege of instruction from Dr. Dewees in the University of Pennsylvania, during the session of 1817–18, since the latter did not lecture in that institution, until the session of 1825–26, when he was appointed adjunct to Prof. Thos. C. James. This last named gentleman was the Professor of Midwifery during the session of 1817–18, which position he held until his resignation in 1834. Dr. Dewees was appointed professor on Dr. James' resignation, and lectured until the session of 1835–36. Of course, Dr. Dalton could not at the time he specifies have officiated as pall-bearer at Dr. Dewees' funeral, the death of the latter not occurring until the 18th of May, 1841.

Dr. Caspar Wistar died on the 22d of Jan., 1818, and it was no doubt at his funeral that Dr. Dalton officiated as pall-bearer.

Again, Dr. Dewees' name is incorrectly given; it was not James, but William Potts Dewees.

Finally, Dr. Physick's name is incorrectly spelled, the final letter being omitted.

ART. XXV.—*A Manual for the Medical Officers of the United States Army.* By CHARLES R. GREENLEAF, M. D., Assist. Surg. U. S. A. 12mo. pp. 199. J. B. Lippincott & Co., 1864.

A USEFUL book, prepared by one who has a thorough knowledge of the duties imposed upon the medical officers of our army. These duties are so varied, and, at times, so complicated that it is not a matter of surprise that the newly commissioned officer should find himself at a loss as to their exact nature and the proper manner of executing them. However well prepared he may be in matters strictly professional, he finds himself in doubt when the *non*-professional duties of his new position demand attention from him. His professional training renders him no assistance as regards *this* performance. His first resort for the necessary instruction is "Army Regulations;" but the growth of the army and increasing experience have necessitated such modifications, alterations and additions, promulgated through orders and circulars, that he does not always obtain the desired information from the Regulations. Dr. Greenleaf's book meets this want. It is a thorough, systematic digest of all the rules, regulations, and customs which obtain in the Medical Corps concerning the non-professional duties of the Army Medical Officer. A careful examination of its pages satisfies us that it will lighten the labours of many a newly-appointed medical officer, and that even those who have had experience will hail its appearance as that of a vade mecum.

The titles of the chapters indicate the several classes of duties, belonging to different official positions, which are explained by the Manual. I. General Hospitals. II. Medical Inspectors. III. Medical Directors. IV. Medical Purveyors. V. Staff Surgeons and Assistants, and Regimental Medical Officers. VI. Contract Physicians. Under each of these titles he gives clear and unmistakable directions, to obviate the confusion and errors that were so common at the beginning of the war, with all newly-appointed medical officers, and which are really reproduced, to a greater or less extent, in every new officer. A supplementary chapter is added, giving "directions for making out *certificates of disability*, and *final statement* papers, for soldiers about to be discharged from the service on account of physical disability, as it is believed this subject is less understood (involving as it does a knowledge of the various bounties and allowances granted by Congress to soldiers) than almost any other which the medical officer has to deal with." L. H. S.

ART. XXVI.—*Diphtheria, its Nature and Treatment; with an Account of the History of its Prevalence in Various Countries.* By DANIEL D. SLADE, M. D. Being a Second and Revised Edition of an Essay to which was awarded the Fiske-Fund Prize of 1860. 8vo. pp. 166. Philadelphia: Blanchard and Lea, 1864.

THE original essay of Dr. Slade, to which the Fiske-Fund prize for 1860 was awarded, appeared originally in this *Journal.* In the edition before us the essay has been revised with evident care, while such additions have been made to it as were suggested by the author's subsequent experience and observation.

In its present form, the work furnishes to the student and young practitioner a very faithful and useful exposition of the principal facts that are now known in respect to the nature of diphtheria, its causes and treatment.

It was to be hoped that the opportunity furnished by the extensive prevalence of diphtheria in our midst for several years past would have been improved by some industrious inquirer, to investigate more fully than has yet been done the pathology of the disease, with a view to render its diagnosis more certain, and its therapeutical management more settled and more satisfactory in its results.

That we have derived from our recent familiarity with the disease some additional light as to its pathological character, and greater skill and success in its management will not, we believe, be denied; it is nevertheless true, that much diligent study and careful observation are still demanded to master the true etiology and nature of diphtheria so as to enable us to decide with greater certainty upon the means for its prevention, or, when it has already occurred, to adopt a plan of treatment the best adapted to conduct the disease to a prompt and favourable termination. D. F. C.

Art. XXVII.—*A System of Surgery.* By James Miller, F. R. S. E., Professor of Surgery in the University of Edinburgh, &c. &c. 8vo. pp. 1387 with index. Edinburgh: Adam and Charles Black, 1864.

The recent sudden death of Prof. Miller, in the prime of life and but a few weeks after the publication of the work above announced, adds a melancholy interest to the short notice we are called upon to make of it. Although modestly presented as a new edition of his previous volumes on the *Principles and the Practice of Surgery,* it may be considered almost as new a production in fact, as it is in its title, and evidently was in the estimation of its lamented author.

Those who are familiar with the separate volumes, which have been widely circulated in the successive American editions published by Blanchard & Lea, will recognize the agreeable style and superior illustrations, as well as the clear and comprehensive expositions of the leading topics, that secured the popularity of these favourite text-books in both branches of Surgery. So many additions and alterations have been made, and so large a number of admirable woodcuts introduced, and there is really so much evidence of recent adaptation to later views and experience, that the book is certainly entitled to be received not only as something more than a new edition, but a very respectable fulfilment of the desire which is expressed in the preface to "constitute a complete system of surgery, brought up to the level of science in the present day.

Future editions would doubtless have enabled Prof. Miller to give more fully the intended character of a complete system, and would probably have secured to his numerous pupils and admirers, a more convenient form in two volumes, instead of the bulky single volume; but we find so much to be pleased with in the manner in which most of the important topics of a general work on surgery have been treated in this volume, that we are glad to welcome it as a valuable addition to the school-books upon its branch and a material improvement on the well-known publications of which it is offered as the regular successor. Although not so full and well brought up in some matters as we should desire—often diffuse and occasionally very brief, being, as usual in all these systematic treatises, unequal in its discussion of different subjects—it is nevertheless excellent in many of its chapters both in regard to completeness and to the level of the times.

It is a worthy memento of a deservedly distinguished votary of science and humanity, and a gifted teacher of the principles and practice of surgery. On this account, apart from its unquestionable merit, it must be sought for by a large number of readers who sincerely mourn the departure of their honoured preceptor. Cut off in the midst of an unusually active career, he has left us the best evidence of his practical value to his profession and country, as well as to the ancient university of which he had long been a popular professor.

E. H.

Art. XXVIII. *The Diseases of the Ear, their Diagnosis and Treatment. A Text-Book of Aural Surgery, in the Form of Academical Lectures.* By Dr. Anton Von Tröltsch, Aural-Surgeon and Lecturer in the University at Würzburg, Bavaria. *Translated from the German, and Edited by* D. B. St. John Roosa, M. D. Illustrated with Wood Engravings. 8vo. pp. 254. New York: W. Wood & Company, 1864.

The manual of Dr. Von Tröltsch, which first appeared at Würzburg, Bavaria, in May, 1862, furnishes a very useful introduction to the study of aural pathology and therapeutics, in the more complete and voluminous treatises and monographs, for which we are indebted to the master aurists of Europe, while it is an excellent textbook in following any course of clinical instructions on the diseases of the ear.

The treatise of Dr. Von T., though concise, comprises a very fair exposition of what has been already accomplished in the department of which it treats, and, at the same time, the results of the author's personal observations and investigations, which have been evidently neither circumscribed in extent nor carelessly made. Dr. Roosa is entitled to thanks for having placed this very excellent manual within the reach of the medical students of the United States.

The affections of the external ear, auditory canal, and tympanum are those first treated of. The author points out the importance of examining into the state of the external ear, as well to detect whatever disease may there exist, as to form from its condition a useful judgment in respect to the existence and character of the diseases of the more deep-seated portions of the organ. In the exploration of the auditory canal Dr. Von T. insists upon the superior means of illumination by the employment of the concave mirror, than is furnished by any other of those previously employed.

In considering the several morbid conditions of the cerumen of the ear, the author shows how little importance is to be ascribed to them, excepting in the case of the accumulation and concretion of the cerumen, in which case it acts as a foreign body and, as such, may impede the hearing or inflict very serious injury upon the membrana tympani.

The several forms of inflammation of the ear are described under the heads of follicular or circumscribed inflammation of the auditory canal; otitis externa, or diffuse inflammation; myringitis, or inflammation of the membrana tympani; aural catarrh, or mucous catarrh of the middle ear; otitis interna, or purulent catarrh of the middle ear; otitis, or general inflammation of the various parts of the ear; while aural polypi, and nervous deafness, complete the list of affections of the ear treated of in the manual before us.

As consequences of otitis externa, in its chronic form, are enumerated the slit and ring-formed narrowing of the auditory canal, exostoses, and hyperostoses.

Dr. Von T. describes the affections of the membrana tympani as of very common occurrence; he believes, however, that they seldom occur alone, but are usually the result of disease seated in the neighbouring parts of the ear. In the acute form of myringitis he lays down the prognosis as favourable. The pain and purulent discharge soon ceasing, recent perforations of the membrane healing quite readily when uncomplicated with purulent catarrh of the middle ear; and the thickening of the membrane gradually disappearing, the hearing is restored. In chronic myringitis the prognosis is much less favourable, a cure, if at all effected, can only be hoped for after a most protracted treatment, and even then it is very seldom that the hearing is fully restored.

The account given by the author of the acute and chronic forms of aural catarrh, and of the complication of the chronic form especially, with catarrh of the pharynx and of the Schneiderian membrane, is tolerably full and generally accurate.

The correct diagnosis of acute catarrh of the middle ear is of importance. When of some severity and attended with considerable fever the evening exacerbation of which is often attended with delirium, rolling of the head, and a wild look out of the eyes, the disease has not unfrequently been mistaken and treated for acute meningitis. This is especially apt to be the case when the disease occurs in young children.

The chapter, or lecture, on acute internal otitis, or acute purulent catarrh, is replete with interest and instruction. Dr. Von T. directs attention to the fact that our knowledge of purulent catarrh of the middle ear in infancy is derived in great measure, if not entirely, from pathological investigations after death. There can, we think, be very little doubt that this affection is of far more frequent occurrence than is generally supposed. The difficulty in the way of forming a correct diagnosis results from the symptoms during life, strongly simulating those of acute meningitis; while from the absence, in the early stages, at least, of the attack, of any discharge from the ear, and the inability of the little patient to describe the location of his sufferings, we have nothing especially to direct attention to the inner ear as the seat of inflammation. We may remark, also, that more or less congestion and irritation of the cerebral meninges is very apt to arise in the course of the attack, by which the aural symptoms are still more completely masked. The cases we have seen and whose true character was tested after death, have almost invariably occurred in subjects having a decidedly scrofulous taint. This was the case, even, when the disease of the ear made its appearance in the course of, or as a sequel to an attack of scarlatina.

The few general remarks made by Dr. Von T., on the subject of otorrhœa, considered in reference to its remote effects—particularly its influence upon the circulatory system, in favouring the formation of emboli, more especially in the encephalic vessels and sinuses—of phlebitis, of abscess of the brain, of purulent meningitis, etc., are worthy of all attention; they are particularly suggestive in a pathological and practical, as well as diagnostic point of view.

The chapters on nervous deafness and tinnitus aurium, though they present nothing very positive as to the pathology or treatment of these troublesome and annoying ailments, nevertheless furnish as good an account of them as could be expected in the present state of our knowledge, which is confessedly very imperfect as to their nature, their causes, or the means adapted for their removal.

In respect to the various noises in the ear included under the head of tinnitus aurium, from the most transitory to the most enduring, it is more than probable that they are always symptomatic of diseased conditions of the auditory nerve, when they are not the result of actual sounds from vibrations produced within the body itself, as from the pulsations of the carotid or other arteries, suddenly increased action of heart, etc. Tinnitus aurium will be found to be a symptom attendant upon almost all the abnormal irritated conditions of the brain, whether originating in the brain itself, or reflected from some other part. It is always present in acute inflammation of the membrana tympani and of the cavity of the tympanum, and is coincident with all causes which increase the pressure of the fluid of the labyrinth. Thickenings and rigidity connected with increased tension of the membranes of the fenestræ, chronic hyperæmia of the ear will, also, cause most oppressive noises of the ear and head. In proportion, therefore, as we become better acquainted with the various abnormal conditions of the ear, their nature, causes, and location, will our means for the removal of tinnitus aurium become more effective.

The therapeutical directions given by Dr. Von T. in the several diseases of the ear are marked throughout by good sense, and based upon rational and generally accepted principles, and are equally removed from that miserable expediency which leaves everything to "nature's efforts," or that rash interference which too often increases the mischief it is intended to remedy. D. F. C.

Art. XXIX.—*Outlines of Surgical Diagnosis.* By George H. B. Macleod, M. D., F. R. C. S. E., Fel. Fac. Phys. and Surg. Glasgow; Lecturer on Surgery, Anderson's University; Surgeon to the Glasgow Royal Infirmary, and the Lock Hospital; Late Senior Surgeon Civil Hospital Smyrna, and General Hospital in Camp before Sebastopol; Mem. Corr. de la Soc. de Chir. de Paris; and Author of "Notes on the Surgery of the War in the Crimea." Reprinted from advance sheets. New York: Baillière Brothers, Broadway, 1864.

Dr. Macleod is well and most favourably known to the profession of this country by his *Notes on the Surgery of the War of the Crimea.* Since the breaking out of our civil war this volume has been reprinted and largely circulated. It is distinguished by a clear statement of facts, a nice discrimination of the causes of excessive mortality during that eventful campaign, and a judicious consideration of the diseases and accidents incident to war.

In the volume before us the author has entered upon an entirely new field of study, and we were prepared to find him much less successful. The same hand that sketched the surgical history of a military campaign with so much vigour and truth as to gain universal applause, might well fail when attempting to establish the philosophical rules of an abstract science. But we are not disappointed. Dr. Macleod has proved himself fully equal to the task which he has undertaken, and has produced a work which will add to his former well-earned reputation. We do not wish to be understood as indulging in indiscriminate praise, for this volume is by no means above criticism; but when we consider the difficult nature of the subject, we must conclude that he has achieved success. A treatise on diagnosis must of necessity consist simply of dry detail. It can have little more liveliness or elasticity than a dictionary. Its merits, therefore, do not consist in its entertaining qualities, but rather in its accuracy and conciseness. Accordingly we find that the author seldom indulges in a quotation or a reference to a writer, but steadily fixes the reader's attention upon the varying phenomena of disease as illustrated by signs and symptoms. This is a work, then, of mere reference, and as such should be examined.

In the arrangement of subjects the author has chosen the alphabetical form, for which he apologizes in a short preface. We can but consider this a mistake, although not serious, as the real value of the work is not thereby affected. The alphabetical order takes subjects out of their anatomical, physiological, and pathological connections, in which we naturally, and by habit, prefer to study them. Let any one compare the recent work of Da Costa with this of Macleod, and he will at once recognize the advantages of a natural over an artificial arrangement of subjects.

The work opens with an introduction of sixty pages, in which the author establishes the principles of diagnosis. He points out the methods of procedure, the instruments employed, and the value of the senses. The student cannot too carefully study this section, nor too faithfully adhere to its precepts. The following extract will show how discreetly the author advises the surgeon to approach his patient:—

"It may be here remarked, that in his interrogations and all his intercourse with the sick, the surgeon must be most kindly in his manner if he wishes to elicit the information he seeks. Patience and tact are often much required in dealing with the ignorant. 'To question fitly is the art of a master,' says Rousseau. The advice of Sydenham is worthy of constant remembrance, when he says, that the surgeon, in his dealings with the sick, should recollect 'that as he is himself not exempt from the common lot, and is liable and exposed to the same laws of mortality, the same miseries and pains, as are all the rest, so he may endeavour the more diligently, and with the more tender affection, as being himself a fellow-sufferer, to help them who are sick.' The ignorant are often so conscious of their ignorance, that they are at once confused if questioned sharply; while with all it is desirable to use plain, concise, and simple language, and try by kindness of look and manner to give confidence. We should interfere as little as possible with the patient in his narrative, so as that nothing be suggested to him at first. In putting questions, let them be as much as possible such as only demand a 'yes' or a 'no,' and we must be sure that the question be perfectly understood before the answer is noted."

The following caution is too often overlooked by surgeons:—

"In examining a part, we should never unnecessarily repeat any painful movement or test, after once satisfying ourselves of the point inquired into. The continued rubbing together of the fragments of a broken bone, or the repeated introduction of a probe, after the matter to be decided has been once clearly made out, is the refinement of cruelty.

"Again, in prosecuting our examination, we may have occasion to make the patient uncover the affected part and assume various attitudes and postures. All this demands, especially in the case of females, circumspection and delicacy. It is an axiom in British surgery, in examining a female, never to uncover any part of whose normal condition we have no reason to doubt."

In taking up a special inquiry the surgeon first turns his attention to the past history of the patient, which includes the family history; personal history; temperament; age; sex; occupation; habits; moral condition; residence. He then proceeds to study the present condition of the patient. And first, information obtained by sight, involves form; colour; dimensions; relationship; direction transparence; movements. The information obtained by touch, includes consistence; temperament; movement; specific gravity; dimensions; connections; and special characters. Information obtained by the ear, auscultation and percussion in surgery; then information obtained by smell; and information obtained by taste. Finally, he examines the circulatory, respiratory, nervous, digestive, and genito-urinary systems. Under each of these heads all the symptoms and varying conditions induced by disease are carefully described. The introduction closes with a description of the different instruments employed in the investigation of surgical disease—as those used for the mouth and throat, eye, ear, nose, vagina, rectum, urethra; probes, sounds, &c.; bougies and catheters; exploring and acupuncture needles; and, finally, chemical tests; and effects of remedies.

The subject matter of the volume opens with Abscesses and closes with Veins. In some instances the disease or accident is placed in the alphabetical list, while in others the name of the part is employed. For example, all forms of Fracture are arranged under this general head; but under the division Brain we find the surgical diseases and accidents affecting this organ. From a careful examination of the work we are satisfied that every form of surgical disease or accident is appropriately entered and analyzed.

To give the reader a correct idea of Dr. Macleod's treatment of his subjects, we make the following quotation from the articles Dislocation—Femur:—

"*Ilio-ischiatic. Dislocation Backwards and Upwards, or Backwards and Downwards.*—This is the most common dislocation of all. It occurs when the thigh is adducted strongly and rotated inwards; or when the limb, being in a position of adduction, receives a diffused blow on its back surface; or the patient falls while carrying a load on his back.

"A. *Deformity.*—The hip is deformed, being more than usually prominent. The fold of the hip is higher, and removed further back than usual. The head of the bone, which looks backwards, may be felt on the dorsum of the ilium, and obscurely (in fat subjects not at all) if it be in the foramen. It rotates with the shaft. The trochanter is approximated to the anterior superior spinous process, and is carried backwards. It is at a greater distance from the tuberosity of the ischium than in the normal condition. It lies close to the edge of the acetabulum, and is turned forwards. It is less prominent than usual.

"B. *Function.*—There is very little voluntary motion. Adduction and rotation inwards, and flexion, though painful, are possible; while abduction and rotation outwards, and complete extension, are impossible.

"C. *Length.*—The thigh is shortened in proportion to the distance which the head of the bone is removed from the acetabulum. The heel is raised, and the ball of the great toe rests on the inner ankle or instep of the sound limb.

"D. *Axis.*—(*a*) Long. Thigh lies in a direction from the acetabulum to the sound knee. (*b*) The thigh is flexed on the pelvis, and the leg on the thigh. The knee and foot are rotated inwards; and the knee is carried forwards, and lies in front of the other. Its external condyle looks obliquely forwards.

"E. *Relationship of Processes.*—The relationship of the trochanter to the anterior superior spinous process, and to the tuberosity of the ischium, is changed. It lies behind a line passing from the one to the other, when the limb is flexed so as to be at right angles to the pelvis, and slightly adducted, in place of being in a line with these two processes when the thigh is so placed.

"F. *Crepitation.*—When observed, is of a coarse rubbing character.

"G. *Accessory Signs.*—The pain is not very severe, nor the swelling usually great. The circumference of the upper part of the thigh is increased, and there may be discoloration at the part where the force was applied.

"When the head of the bone has passed into the sacro-ischiatic foramen, all the signs noted above will be less marked (for obvious reasons) than when the head of the bone lies on any part of the back of the ilium. There will be less deformity of the hip, less shortening, less inversion and adduction, and less approximation of the trochanter to the anterior superior spinous process. The flexure of the thigh on the pelvis is, however, decided; and when the patient is lying flat on a hard bed it is very evident. If, when the patient is so placed, an attempt be made to straighten the limb, the loins will be arched, and *vice versâ*.

"Ilio-ischiatic dislocation can seldom be confounded with fracture of the head of the bone, as the eversion of the limb, in the vast majority of the cases of fracture, will—along with the ease of reduction, the crepitation, and possibly the age of the patient—distinguish them. But in those rarer cases of fracture in which there is rotation of the limb inwards, and especially if the trochanter major is at the same time broken and carried upwards and backwards, so as to resemble the head of the bone in dislocation, the diagnosis is not so easy. The distinction depends on the following points:—

"1. The limb being fixed in dislocation, and its mobility increased in fracture.

"2. The difficulty of reduction in dislocation, its ease in fracture.

"3. The continuance of the reduction when once achieved in dislocation, its almost immediate reproduction in fracture.

"4. The absence of crepitation in dislocation.

"5. Shortening being more decided in dislocation.

"6. Position of the head of the bone, and its rotating with the shaft in dislocation.

"7. Dislocation being usually an accident of middle life, and resulting from great violence, while fracture of the head of the femur is an accident of advanced life, and frequently results from slight violence.

"*From fracture of the acetabulum* this dislocation is to be distinguished, as occasionally there is a similar shortening and inversion of the limb in that accident. But such a fracture is a much more serious injury, and is followed by more violent general effects; crepitation is very marked, and the renewed displacement of the bone takes place with great ease."

Again, the points of difference between diseases or accidents are arranged as in the following "Differential Diagnosis between Intra- and Extra-capsular Fracture:"—

	INTRA-CAPSULAR FRACTURE.	EXTRA-CAPSULAR FRACTURE.
1. *Age.*	Rarely before 50.	All ages, but mostly between 30 and 50.
2. *Sex.*	In the female most.	Equally in both.
3. *Cause.*	Frequently slight, indirect violence. A trip or false step. (A fall on the trochanter very rarely the cause.)	Severe and direct violence. A blow on the trochanter, anterior part of the thigh, or a fall on the foot or knee.
4. *Deformity.*	Slight shortening at first (very rarely over an inch), but afterwards it may be considerable. This increase may occur suddenly. The prominence of the trochanter is diminished, and approached to the crest of the ilium.	If there be no impaction the amount of shortening is marked at first (may be as much as one and a half or two inches). It is more so than in fracture within the joint. The shortening changes little afterwards. The trochanter may be a little displaced upwards and backwards. Its prominence is not diminished unless there be impaction. If there is impaction, there may be no shortening.
5. *Unnatural Mobility.*	Marked in the socket of the joint.	If no impaction, this is marked, but not at so deep a point as in fracture within the socket. If there is impaction, this is not observed.
6. *Crepitation.*	Obscure, and only on drawing the limb to its normal length, and rotating it.	Little or no extension needed to develop it on rotation. Easily apparent if there is no impaction.

7. *Loss of Function.*

Usually decided, but occasionally partially retained. The trochanter moves on a shorter axis than usual, but has still part of the neck of the bone as a radius.	Decided if there is no impaction. The bone turns on its own axis.

8. *Pain, &c. &c.*

Slight, but deeply placed. Swelling and discoloration over the trochanter usually absent.	Superficial, and especially above and behind the trochanter, and usually severe on any movement or pressure. Swelling and discoloration over the trochanter usually marked.

In general the author has treated each subject with the thoroughness which the above examples indicate, leaving no points of inquiry unexamined. There are some diseases in which the elements of diagnosis are not so exhaustively reviewed as is desirable in a work of this kind; but these are errors of omission which can be supplied in subsequent editions.

In parting with Mr. Macleod's volume we do not hesitate to pronounce it a valuable addition to our surgical literature. We cordially recommend it to those who, in the practice of surgery, desire to have at hand a convenient manual, by the aid of which they may systematically review all the points in the diagnosis of obscure diseases, and properly estimate their relative importance.

S. S.

Art. XXX.—*Some Causes of Excessive Mortality after Surgical Operations.* By T. Spencer Wells. F. R. C. S., Surgeon to her Majesty's Household, &c. &c. From *British Med. Journal*, Oct. 1, 1864.

In this highly interesting and instructive communication, which was read before the British Medical Association, at its late meeting in Cambridge, in August last, Mr. Wells discusses a subject of the deepest importance, and one which has prominently occupied the attention of the profession for the past few years. The difference in the mortality in different hospitals has been shown to be most marked, and the causes of this have given rise to many animated discussions during the last year in one of the prominent surgical societies of Paris, but without any satisfactory solution of the question having been reached. Indeed, some of the statements made have seemed to render an explanation more difficult. Thus it is asserted that at the Lariboisière, a hospital constructed especially to fulfil all the requirements of the advanced hygienic science of the day and in which the ventilation is claimed to be all that can be desired, the mortality is far greater than in some of the other Parisian hospitals, the hygienic conditions of which are deemed to be far less favourable.

Mr. Wells asserts that the mortality after surgical operations is excessive, and he maintains that it may, by attention to proper sanitary measures, be diminished; and he quotes a number of facts to show that the mortality of the sick who are treated in large general hospitals in large towns, is twice as great as the mortality of the sick who are treated in small hospitals in small towns. He adds, "that it remains to be seen, whether the mortality in small hospitals, is not twice as great as the mortality of the same diseases when they are treated in clean cottages."

The conclusion at which Mr. Wells arrives, "is that hospitals, without being so far removed from the centres of population as to be accessible with difficulty, should be surrounded by open spaces, and should not be too large for the number of patients. And, whatever may be the size of the building, the fewer the number of floors or stories in it, the less is the probability of excessive mortality."

But he truly adds, "Lessening the number of large hospitals, and increasing the number of small hospitals, and having the wards all on one story, would all be useless if there are too many beds in a ward. It is very possible that a large hospital, with large wards and beds widely apart, would be a far better place for the sick than a small hospital in which many beds are crowded into small wards. Indeed, by lessening the size of a ward, we multiply the surfaces and angles to which putrescent matters or organic poisons may adhere. And it is extremely probable that we may have to go farther than this, and not only lessen the size of hospitals, the number of floors of the building, the number of wards, and the number of beds in each ward, but also *isolate* the patient in all cases when contagion or infection is probable. Not only must communication of wards with each other be avoided, but there must be separate wards, containing one, or at most two beds, for patients recently operated on, and in lying-in hospitals, for women recently confined, before we can hope to reduce mortality from the excessive to the unavoidable rate."

These lessons of modern sanitary science, are borne out by the most recent discoveries in physiological chemistry, and in proof of this, Mr. Wells refers to the remarkable recent labours of Pasteur on fermentation, putrefaction, &c. &c., all of which, he justly believes to have a very important bearing upon the development of purulent infection, and the whole class of diseases most fatal in hospitals and other overcrowded places. Mr. W.'s sketch of M. Pasteur's researches is so admirable that we are induced to quote it entire, as we are sure that it will be perused by our readers with interest and profit.

"Commencing with purely chemical researches into the phenomena which accompany the decomposition of organic bodies, M. Pasteur was soon led into the field of physiology. He found that fermentation was always associated with the existence and development of certain microscopic beings; and he was led to inquire whether the generation of these living corpuscles was a spontaneous act or change, or whether it could only be explained by the ordinary laws of reproduction. In order to ascertain what germs might be suspended or floating in the atmosphere, he adopted the simple expedient of causing a current of air to pass over gun-cotton—a substance soluble in a mixture of ether and alcohol. The fine fibres of the gun-cotton act as a sort of air-filter, arresting all the solid particles, and the finest powders are found in the solution, and fall slowly to the bottom of the fluid. By careful microscopic examination he found in these atmospheric impurities (1) a quantity of granules of starch, very easily recognizable, and the numbers explained by the abundance of cultivated cereals; and (2) corpuscles which resemble in every particular the germs of the lowest organisms, and vary greatly in size and structure. The germs so collected are fecund. If they are sown in infusions in which any pre-existing germs have been destroyed by ebullition, and which have only been exposed to air which cannot possibly contain any living organism, as it has been passed through a tube of red-hot platinum, an abundance of cryptogamic vegetables or infusorial animalcules very soon appear. These are the *Mucors* or *Mycodermes*, which cover the liquid with a greasy or gelatinous pellicle; the *Mucedinea*, formed of small tubes; *Torulacea*, or non-tubular plants, which attach themselves to the bottom of the vessels. The infusoria are small *Monads*, *Bacteria*, and *Vibriones*. The Bacteria, especially the *Bacterium Termo*, exist in the air in immense abundance. The smallest of the infusoria is found also in putrefying substances. It multiplies in the intestinal canal of man, and is found constantly in the white matter which collects daily between the teeth. In sour milk it is found in company with Vibriones, the most vivacious of the infusoria, whose germs are not destroyed by a temperature of 100° *centigrade*. The spores of the *Mucedinea* remain fecund even up to 120° *centigrade*. It appears that a short exposure to 130° *centigrade* destroys all fecundity even in the most robust; but in nature neither spores, vegetable, nor animal germs are ever exposed to a degree of heat which can render them sterile.

"When an organic infusion has been deprived of germs by heat, and is mechanically protected from the corpuscles which the air might carry to it, it is as unalterable as an ordinary chemical solution of a mineral. The liquids ordinarily the most prone to fermentation now show no tendency to decomposition—no symptom of life is manifested. It is quite clear, therefore, that the development of living beings in organic infusions is not spontaneous, and that, in the circumstances under which fermentation ordinarily takes place, the germs of the living beings are carried in the atmosphere.

"The germination of inferior beings as powerful agents of decomposition, has relations as important in the putrefactive as in the fermentative process. Whenever organic matter undergoes change—dies, is decomposed, putrefies—germs are sown which find their nourishment in the remains given up to destruction. Without these germs the immediate principles of living bodies would be almost indestructible; with them, everything which has ceased to live is returned to the atmosphere and to the mineral kingdom. Blood as it issued from the arteries, fresh urine, milk received into close vessels, and open only to air which had been deprived of germs, remained unaltered for three years; but when these liquids were exposed to ordinary atmospheric air, they very soon became covered with mucedinea, bacteria, and monads, and were filled with moving vibriones.

"Each form of fermentation or decomposition is associated with the growth and development of some low form of vegetable or animal life. It had long been known that the yeast formed in brewing beer was an organized substance, living, and formed by a mass of cells capable of reproduction by budding; but it was left for M. Pasteur to show that the cells of the yeast really nourish themselves at the expense of the sugary infusion, and transform it, not by a physical or chemical, but by a physiological action; that some substances added to the infusion favour the budding and multiplication of the yeast, others retard, others altogether arrest it—like the albumen of fresh eggs, which kills it, or acts on it as a poison. When alcohol is transformed into acetic acid, a vegetable mycoderm (*mycoderma aceti*) is the agent of the transformation. When sugar or lactic acid is converted into butyric acid, the agent is not a vegetable, but a small animalcule, seen in the form of small cylinders or rods, isolated or united into chains of many links, which turn, undulate, and float in every direction in the liquids, and are reproduced by fission. The most remarkable property of these vibriones is that they have the power of living and indefinitely multiplying themselves without oxygen. Not only can they live without air, but air kills them. This peculiarity essentially distinguishes the mycoderms from the vibriones. The mycoderms incessantly feed on oxygen, and when they do not find it in solutions take it from the atmosphere. The vibriones are killed by oxygen, yet it is by them that the butyric and tartaric fermentations are effected.

"These are the most simple of the decompositions produced by animalcules which live without free oxygen. They are phenomena which do not differ from what is called *putrefaction* of animal substances. In putrefaction, as in the butyric fermentation, the work of the vibriones is prepared for them by infusoria. In infusions of animal substances no change is observed for about twenty-four hours; then a slight movement may be observed, which is caused by small animalcules—*monas corpusculum, bacterium termo*—moving in all directions in search of the oxygen in the infusion. If access of air is shut off, the infusoria die as soon as they have consumed all the free oxygen, and fall dead to the bottom of the vessel. But if the infusion is open to the air, they find an inexhaustible supply of oxygen at the surface, when they soon form a pellicle of gradually increasing thickness. But as soon as this living pellicle has been formed, the germs of vibriones are in their turn fecundated, and these animalcules rapidly multiply in a liquid which contains no oxygen. At the bottom, the vibriones change the organic matters into substances of more simple composition; while at the surface the bacteria and mucedinea burn these new products with the oxygen which they take from the atmosphere, and reduce them to the state of the most simple binary compounds—water, ammonia, carbonic acid. In the same way, after the death of an animal or human body, the vibriones and their germs which have remained in the intestinal canal quite inoffensive so long as the movements and functions of life have prevented their development, commence their office directly after the death of the body which they have inhabited. Shut off from oxygen, surrounded by nourishing food, they pass from within outwards, destroying the substances which surround them. At the same time the germs of infusoria which the air has deposited upon the external surface of the body are developed, and work from the surface inwards. At length the infusoria and vibriones meet. The vibriones are killed by the contact of the air, the infusoria die in their turn as soon as they have consumed all the vibriones, and the work of destruction is then complete."

Having thus given a rapid sketch of M. Pasteur's researches, in order that the influence of atmospheric germs upon our bodies in health and disease may be comprehended, Mr. W. remarks: "Although the air contains the germs which are necessary for the processes of fermentation and putrefaction, these germs cannot be everywhere present in all forms and equal numbers. In some currents of air there are few, in others many; they are numerous in the lower strata, fewer and fewer as we rise higher and higher, and almost absent at the level of the snow-capped Alps. * * * M. Chalvet found in the wards of St. Louis a large quantity of starch-corpuscles; and he collected a great deal of putrescible organic matter from the walls, windows, and bed-curtains, and found that the linen returned from the laundry was still tainted by altered blood, pus, linseed-meal, and other organic substances—probably as capable of infecting as threads charged with vaccine lymph. When watery vapour near a suppurating focus was condensed, it was found to be strongly charged with irregular corpuscles resembling dried pus; and Eiselt, of Prague, found small cells, like pus-cells, in the air of a ward where epidemic ophthalmia was raging."

M. Chalvet observes: "The atmosphere of a hospital is no longer a vague expression. The air of it differs essentially from pure air. In 1860 I witnessed the experiments of M. Réveil, and recognized in the most positive manner the presence of organic corpuscles in the apparatus constructed by that skilful chemist. We then observed chiefly cells and the *débris* of epithelial cells; corpuscles of divers forms, which became yellow under the action of nitric acid; and bits of charpie charged with these corpuscles. Under like conditions we saw, with M. Kallman, in the laboratory of M. Réveil, organic *débris* incrusted with a granular substance, which gave the reaction of copper. The dust thus observed was collected in an ophthalmic hospital, where sulphate of copper was largely used as a caustic.

"Dust, collected by dusting the walls of the ward St. Augustine at St. Louis, furnished me with 36 per cent. of organic matter. At another period, in the laboratory of M. Réveil, dust collected from the same quarter yielded 46 per cent. of organic matters, which consisted in large part of epithelial cells, and yielded a horny smell when calcined.

"When wetted, the dusty powder quickly gives off a very fetid smell. Doubtless, the thick layer of dust covering the walls of our old hospitals may produce gases capable of favouring the transport through the air of corpuscles, which, perhaps, play a very important part in the air of hospitals."

M. Trousseau, when commenting on the spread of puerperal fever, says: "These germs will not be developed as readily in all patients, because the conditions of their reception vary infinitely. Some patients, like certain earths, may not recieve certain germs. The wind may spread the same seed widely over a country, and yet the grain will not spring up everywhere alike. Here the soil may be too wet; there too dry; here other germs have grown up, and stifled the new seed. Just so is it with morbid germs and ferments. They, individually, require conditions favourable to their development."

"Carrying on the analogy," Mr. Wells remarks, "between puerperal fever and purulent infection in the various forms which contribute so large a share to the excessive mortality after surgical operations, and applying the knowledge for which we are indebted to Pasteur of the presence in the atmosphere of organic germs which will grow, develop, and multiply, under favourable conditions, it is easy to understand that some germs find their most appropriate nutriment in the secretions from wounds, or in pus, and that they so modify it as to convert it into a poison when absorbed—or that the germs after development, multiplication, and death, may form a putrid infecting matter—or that they may enter the blood and develop themselves, effecting in the process deadly changes in the circulating fluid.

"That these low forms of animal life may seriously affect the blood of the higher orders of animals, is clearly proved by the recent researches of Davaine, who has furnished us with the first well-established example of a disease of the blood due to the presence of inferior beings which are capable of development and multiplication in the torrent of the circulation. These creatures (*bacteria*) differ from the whole class of infusoria which form in putrefied matter, as they disappear completely as soon as putrefaction of the blood commences. The bacteria are rapid consumers of oxygen; and when they exist in the blood they absorb the greater portion of the oxygen furnished by respiration, and thus hinder the combustion of all the effete and used-up substances which ought to be eliminated from the body. The blood, instead of nourishing the body nourishes the parasites. Inoculation of animals with fresh blood which contains them leads to their development in the blood of the inoculated animal, not in any special organ. They consist of minute, straight, extremely fine filaments, varying in length from four to twelve thousandths of a *millimètre*, and have no spontaneous movement whatever. When the blood putrefies they become flexed in different directions, and then break up and disappear."

M. Davaine considers these as a hitherto undescribed species, and he proposes for them, provisionally, the term *bacterides*.

In connection with these important observations, Mr. Wells refers to the recent researches on trichinosis, and the investigations of Dr. Harley on the endemic hematuria of the Cape of Good Hope, which he has conclusively proved to depend upon the development within the human body of the eggs of a parasite. The dependence of various skin-diseases upon the growth of vegetable parasites is familiar to all.

"In all these instances," as remarked by Mr. Wells, "inoculation, or mediate or immediate contact, has been assumed; and it is only lately that the presence of living germs in the air, capable of reproducing contagious diseases, has been demonstrated. The honour of this important addition to our knowledge is due to M. Lemaire, who contrived an apparatus which conveys a current of air over the scalp affected with favus into receivers containing ice. In this way he was enabled to detect the achorion in the air itself so carried, and in the moisture which ensues upon its condensation in the refrigerators, and was able to reproduce the disease by means of the achorion so obtained from the air. Still more important are Dr. Kennedy's curious cases, illustrating the production of measles by the inoculation or inhalation of the fungi given off from mouldy straw or linseed-meal; and Dr. Salisbury's corroborative proofs of the production of a disease like measles by inoculating the fungus—an inoculated disease which seems to protect patients from ordinary measles."

Mr. Wells urges that these observations should be extended and applied to the great object in view—the lowering of excessive mortality—and he refers to the recent experiments of Polli (see No. of this Journal for Oct. 1862, pp. 513–15) on the action of sulphurous acid and the alkaline and earthy sulphites, which open to us a wide field for inquiry. His experiments prove :—

"1. That the injection of a certain quantity of pus into the blood produces pyæmia and affections characterized by multiple abscesses.

"2. That the injection of putrid matter produces septicæmia, or putrid infection, characterized by the symptoms of typhoid gastro-enteritis.

"3. That the injection into the blood of the exudative materials in contagious diseases, as in glanders, produces the general contagious affections.

"In all these cases, the introduction of the foreign substance or poison into the blood must be regarded as the origin of the disease; and Polli went on to inquire whether it would be possible to render the poison inactive, or neutralize it, without such an alteration of the properties of the blood as would endanger life. A great number of experiments upon the action of sulphurous acid and the alkaline and earthy sulphites, showed that sulphurous acid prevents or arrests all known fermentations of organic matters, as well as the putrefactive metamorphosis of animal tissue and liquids; having a much more energetic antiseptic action than arsenic or prussic acid, while it is not, like these substances, poisonous. But the irritating effects of sulphurous acid on the mucous membrane led to experiments which showed that the sulphites of soda, potash, ammonia, magnesia, and lime can be given either in the solid or fluid form in efficacious doses; that they may be found in the urine even several hours after administration; and that the blood, flesh, and viscera of animals to whom they have been administered, resist decomposition much longer than in non-sulphurized animals."

These results led to a therapeutical inquiry, "If the administration of sulphites by the mouth could so modify the fluids and tissues of a living animal as to render its organic constituents more able to resist the putrid fermentation which they would naturally undergo after death, it was a rational hope that a similar effect would be manifested also during life, and that the living fluids and tissues charged with the sulphites would resist the action of morbid poisons which lead to an unnatural rapidity of putrefaction after death.

"Having proved that the sulph*ites*, when given internally, are absorbed, and exert their specific action upon the blood and tissues during all the time necessary for their conversion into sulph*ates* by repeated passage through the lungs, and the elimination of the sulph*ates;* and, further, that to secure the longest presence of the sulphites in the organism, or to retard their conversion into sulphates, it is useful to substitute the hyposulphites, as they require a long oxidizing process to convert them into sulphates—the cautions are laid down—1, that they should be given as long as possible after food, unless it is especially desired to neutralize the fermentative action of the gastric and pancreatic juice; and, 2, that nothing containing citric, tartaric, malic, or oxalic acid, should be taken after them, as these acids decompose the sulphites and hyposulphites, and set the sulphurous acid free. But acetic acid does not decompose these salts.

"It then remained to prove that, when the sulphites are administered to a living animal, they really do alter the action of pus upon the blood, as well as that of putrid matters injected into the blood, or of a virus distinctly contagious and not putrid. By a large number of experiments on dogs, it seemed to be perfectly established that the sulphite or hyposulphite of soda really did neutralize the effects both of pus, putrid matter, and the secretions in glanders, and without any ill effect upon the animal. The administration of those salts to children and adults showed that they are perfectly well borne by the human organism up to three or four drachms daily, and that this quantity is sufficient to prevent or arrest the action of morbid poisons."

Mr. W. states "that the sulphite of magnesia in the solid form answers well for internal administration. It contains more sulphurous acid than other sulphites, and is not disagreeable. The sulphite of soda is disagreeable, easily decomposes, and is chiefly useful in solution for lotions or enemas. The sulphites of potash and ammonia are too disagreeable and changeable for medical use. The hyposulphite of soda is not very disagreeable: its solubility makes it convenient for administration, but it is more adapted for prophylactic use than for severe cases, its action being much slower than that of the sulphites, as it must be converted into a nascent sulphite before the wished-for effect can be obtained.

"Some cases of septicæmia in which I have given the hyposulphite of soda having been already brought before the profession, I will now only add that the effects convinced me that it is a remedy of great value, well worthy of a general and extended trial. But I trust that no such exaggerated expectations will be entertained of its value, or of that of any other remedy, as could possibly lead any one to neglect those leading principles of sanitary science which should govern the size and construction of our hospitals, or those lessons recently taught by physiological chemistry which confirm those sanitary principles—which teach us how easily our patients may be poisoned by any want of that attention which should always secure the most scrupulous cleanliness and purity of everything surrounding them—and which prove that a knowledge of principles and a practical supervision of details must be combined to enable us to recognize, avoid, prevent, or counteract the CAUSES OF EXCESSIVE MORTALITY."

These views are eminently worthy of attention, and as tending to confirm the influence of the sulphites on the system we will refer to the two interesting cases of pyæmia related in this No. (p. 82) by Dr. W. F. Atlee, and the valuable chemical researches of Mr. Lea on the transformation of alkaline sulphites in the human system (p. 84).

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Nature of the Red Blood-Corpuscle.*—Dr. Beale in the first place points out the remarkable fact of the different crystallization of the colouring matter of the red blood-corpuscles, even in animals nearly allied, confirming their inherent specific differences. He believes that the red colouring matter of the blood-corpuscle was once in the condition of living germinal matter, having particular specific characters from different existing conditions and inherent powers, *vital power.* The colourless corpuscles and the colourless nuclei of the red corpuscles consist of matter in a living state. The various shapes of blood-corpuscles are due to their consistence and movements, and the action of fluids and gases upon them; they are not structural characteristics. Dr. Beale disproves the existence of a cell-wall to a red blood-corpuscle in various ways—that they sometimes change form without pressure, or portions are detached from them as if they were of a treacly consistence; that similar changes may be produced by a gentle heat—very fine threads are, as it were, drawn out from the red viscid matter; that if frog's, or other large corpuscles are suddenly compressed, many will be subdivided into smaller ones, instantly spherical, without appearance of ruptured cell-wall or escape of contents; that a nucleus may pass completely through the coloured material; and finally, that the corpuscles of the blood of the guinea-pig soon break up into very small rounded portions, which show angles, and at last become distinct tetrahedral crystals. The whole of the soft, red, viscid matter of which the blood-corpuscle was composed, became crystalline. One corpuscle may form one crystal, or one large crystal may be formed out of several corpuscles. As this change occurs immediately blood is drawn, and seems to affect the youngest corpuscle, it is probably to be explained by the tendency to form processes which germinal matter often exhibits when stationary. When water is added to blood-corpuscles they swell, but they do not burst; they become very transparent, and doubtless a certain quantity of the fully formed colouring matter is dissolved out; but as the water evaporates, the corpuscles again assume their ordinary characters, many being only paler than before. . . . . The red corpuscle exists first as a very small spherical mass of transparent colourless germinal matter, which continues to grow for a time, and gradually undergoes conversion into the red colouring matter, &c.—*Quarterly Journal of Microscopical Science*, 1864.

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2. *Experimental Inquiry into the Changes in the Composition of the Blood, induced by Inanition.*—The subjects of Dr. Panum's investigations were dogs, and he believes that he has proved that in complete inanition no essential or remarkable alteration is produced either in the proportion of blood generally to that of the body, or in the relative proportions of the chief constituents of the

blood (that is to say, of the corpuscles and fibrin) to one another. No doubt the absolute quantity of blood constantly diminishes during the progress of starvation, but it certainly does not diminish in a greater proportion than the whole mass of the body, and the different opinion held by Chossat and by Bidder and Schmidt is due to the incorrect method employed by them to exhibit these relations. This maintenance of the normal relative proportions of the chief constituents of the blood in complete inanition receives its full significance when it is shown that it still exists, though the animal is allowed to drink at will, for it follows that the materials destined for the nutrition of the tissue which have been absorbed from the intestine, as well as oxygen and the products of disintegration—carbonic acid and urea—only transiently form constituents of the blood; with deficient supply, the formation of the tissues, the so-called progressive metamorphosis is soon arrested, for the mass of the solid constituents of the blood do not, to any extent at least, undergo alteration, and are thus unable to furnish directly the requisite material. Consequently the blood, as a whole, is not the material of nutrition, but is in reality only a means of transport for nutrient compounds—in other words, an organ occupying an intermediate place between the tissues and the substances absorbed from the intestine. Hence, also, the important conclusion may be deduced that neither the blood-corpuscles nor the fibrin is the true or essential material of nutrition; for their quantity in relation to the total body-weight does not diminish in the proportion which would occur if they were consumed as pabulum for the nourishment of the tissues. On the other hand, the constant, though not very considerable, diminution of the solid, and especially of the albuminous constituents of the serum, renders it very probable that a portion of these is to be regarded as the material really consumed in the nutrition of the tissues.—*Brit. and For. Med.-Chir. Rev.*, July, 1864, from *Virchow's Archiv*, Bd. xxix., 1864.

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3. *Degeneration and Regeneration of Nerves.*—M. VULPIAN has lately discoursed on this very interesting subject in his lectures at the Museum of Natural History in Paris. The physiological property of motor and sensitive nervous fibres is the property of undergoing certain modifications under the influence of some agent. This property belongs to the nerve-fibre, independent of the nervous centres. "I am thoroughly convinced," says M. Vulpian, "that the origin of this property of the nerve is to be sought for in the nerve-fibre itself. Our classical works tell us that the nerves borrow their force or property from the nervous centres; but this is a complete error. If a motor nerve received its properties from the spinal marrow, it ought to lose them when cut; but it does nothing of the kind; for, when the peripheric end of the cut nerve is excited, the muscles contract; and more than this, when its nerve-force has been exhausted by long and continued excitation, it recovers its force under repose. It is strange that this simple demonstration has not convinced every one.

In considering the phenomena attending the disappearance of the nerve-force, we have to observe—1. The duration of the excitability of the nerve after section; 2. The mechanism of its disappearance.

In 1838, Müller investigated the first of these questions—the duration of the excitability of the nerve; and he concluded that it disappeared after some weeks. In 1840, Gunther and Schön made similar observations; and in 1841, M. Longet obtained similar results. It was also noted, that when, after section, the nerve had lost its properties, the muscle to which it was distributed still preserved its power of contractility—showing the independence of muscular irritability. Brown-Séquard and Martin Magron have seen muscular irritability last longer than two years in certain animals, although every trace of excitability had disappeared in the nerve which had been cut and passed into the muscles. Another proof of the fact that muscular contractility is independent of nervous excitability has been given by M. Bernard. He has demonstrated that when the action of the motor nerves over the muscles is absolutely arrested, muscular irritability, contractility, may still exist.

The question as to how the nerve loses its properties is of the highest interest, and its answer will give us a key to some of the most interesting phenomena which have exercised the sagacity of physiologists.

The force or property of the nerve disappears as a consequence of alteration of the nerve-substance; but this alteration is not appreciable by our means of investigation until the nerve-force has completely disappeared. The changes of degeneration which go on in the cut nerve are influenced by different circumstances. Thus the changes go on more rapidly in a young than in an old animal. In the young, the complete change is effected in about two months; but in an old animal, not before six or seven months. The species of animal and season of the year also modify the result.

According to M. Waller, the change of structure of the nerve is due to interference with the nutrition of the nerve-fibres. The spinal marrow, in his view, is the centre of nutrition of the nerves—of the motor nerves, at least; so that, when the nerve is cut, its nutrition is disturbed, and change in structure results. M. Waller cut both the roots of a spinal nerve; and he found that change of structure did not occur in both of the so cut nerves. In the anterior root, he found the peripheric end alone degenerated; and in the posterior root, the central end. Hence he drew the conclusion, that the sensitive fibres have for their nutritive centre the ganglions of the posterior roots. This deduction is strengthened by the fact that, when the posterior root was ligatured beyond the ganglion, the outer end—the peripheric—was altered in structure.

On the same basis of facts, M. Shiff has made many interesting researches concerning recurrent sensibility. He cut the anterior root, and found, as Waller had done, that the peripheric nerve-fibres were changed, and that the central ones remained healthy. But he also found that some of the fibres in the peripheric cut end of the nerve remained sound; and that some in the central end were altered. And of these fibres, those which remained unchanged in the peripheric end, and those which were altered in the central end, were evidently fibres emanating from the posterior root. Hence the conclusion that recurrent sensibility is due to recurrent nervous fibres. How the gray substance can have a nutritive influence over the anterior root, and the ganglion over the posterior root, remains to be shown; but the fact appears certain.

In this way Waller has discovered an excellent means of studying the distribution of nerves by alteration of their fibres, and of recognizing in a mixed nerve the fibres which are sensory, and those which are motor. To this method of observation Waller has given the name of "new anatomical method."

We may, indeed, expect great results from this "method" of observation. Thus, for example, we know the union of the spinal accessory with the pneumogastric nerve. Well, if we divide the roots of the spinal accessory, wherever we find in the divisions of the pneumogastric altered nerve-fibres, we may safely say that they are fibres of the spinal accessory. If, again, we wish to know whether the nervus petrosus is a branch of the facial or of the fifth pair (through the spheno-palatine ganglion), we cut the facial nerve, and examine the petrous nerve, in the course of ten to fifteen days. We then find in it a mixture of healthy and changed nerve-fibres, and from this fact are justified in concluding that the petrosal nerve has a double origin. Again, does the chorda tympani go to the tongue? No; because, after cutting the facial, there is not found in the lingual a single fibre changed, beyond the fibres the submaxillary ganglion furnishes to the gland. These are examples of the value which this new method of observation renders to physiology and pathology.—*Brit. Med. Jour.*, Oct. 8, 1864.

4. *Existence in the Human Subject of Organs Unprovided with Nerves, Lymphatics, or Capillaries.*—Prof. Simpson, of Edinburgh, in an article in a recent number of the *Med. Times and Gaz.* (Oct. 29, 1864), gives an account of some investigations relative to the structure of the umbilical cord and placenta.

The following are his general conclusions:—

1. The volume of the umbilical cord and fœtal portion of the placenta is formed of nucleated cellular tissue, traversed by the tubes of the umbilical arteries and vein and their numerous placental subdivisions; and the cord and fœtal surface of the placenta are covered by a sheath of serous or seroid membrane.

2. Into the composition of these parts no capillaries, vasa vasorum, lymphatics, nor nerves are found to enter.

3. Hence, in human anatomy, we have these organs, forming a large mass, weighing on an average about two pounds, presenting a type of structure resembling that of some of the inferior zoophytes. And,

4. The human mother and her child, two of the most highly-organized beings in existence, are thus temporarily united together, during the intra-uterine life of the latter, by structures of the lowest zoological type.

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5. *On the Relative and Special Application of Fat and Sugar as Respiratory Food.*—Dr. T. HAYDEN read an interesting paper on this subject before the British Association for the Advancement of Science at its late meeting.

Dr. H. stated that "the classification of food under the two heads of 'calorifacient,' or heat-producing, and 'nutritive,' or tissue-forming, is now universally admitted by physiologists. The distinction is an important one, and founded upon the cycle of changes which carbonaceous and nitrogenous aliments respectively undergo in the construction, growth, and disintegration of animal bodies. Whilst, however, it is found that the nutrient or nitrogenous substances are all presented by nature's Great Author under the form of albumen, or the allied substances, gluten, caseine, or fibrine, and, in the complex process of digestion, after undergoing the preparatory change of conversion in the stomach, are directly received into the circulation. Fat, under any of these various forms, never so enters, being transmitted through the lacteal system of vessels and glands, but, after admixture with the lymph, is received into the general circulation, under the modified form of an emulsion. The salient points of contrast thus observable in the constitution of fat and sugar, as well as the remarkable divergence in the preliminary stages of their digestion, the preparatory processes to which they are respectively subjected, and the different channels by which they enter the circulation, must indicate some difference in the mode of their application to the great purpose for which they are both destined, the maintenance of animal heat. I believe these two substances possess different values as food; that they undergo different transformations, and during these transformations subserve distinct purposes of economy; that the period of their retention in the body is the same; that they are not mutually convertible; but that ultimately they pass out of the body under the common form of carbonic acid and water, and are jointly concerned in the production of animal heat. In the physiological state, oleaginous alimentary substances are always in the first instance assimilated, and occupy cells, whether of the adipose tissue or of the liver. In this summary I do not include the azotized fat of the nerves and nerve-centres named 'cerebrine,' which belongs to a higher order. As adipose tissue, fat gives rotundity of form in moderate proportion, and beauty of configuration to the body; it serves as a soft and elastic nidus for delicate organs, as the eye and the kidney, and in relation to the former assists passively by its compressibility and resiliency in accommodating the organ to the vision of objects at different distances under the combined action of the recti and obliqui muscles. Finally, fat, as adipose tissue, enveloping the body, as it were, in a natural mantle, prevents rapid refrigeration, in virtue of its property as a bad conductor of heat. Thus it will be seen, that, in the form of deposited fat, oleaginous food serves a variety of subsidiary, but still useful purposes in the animal body, independently of its great end of ministering to the supply of animal heat. It is universally admitted that it is necessary to the due performance of the various functions of the body that the vital stimulus of heat be maintained at the physiological standard; certain functions are termed vital, because the suspension of them beyond a very brief period, is followed by death Such are respiration and the circulation of the blood, to select such a familiar example. In the instance of both these important functions, the fatal consequences which must ensue from temporary interruption are amply provided against. The reserve and residual air in the lungs will sustain life, or rather render it possible to resuscitate the animal for several minutes after respiration has ceased, whereas, if these volumes of air have been expelled from the lungs by a heavier fluid, such as water, immediate death ensues, as shown by the Committee of this Association, appointed to investigate the subject of suspended respiration. Interruption to the supply or return of blood through one or more vessels is compensated for by the establishment of a collateral circulation. In a similar manner provision is made, in the fat deposited in the body, for the maintenance of animal heat during a certain period, under circumstances of total deprivation of heat producing food; but before deposited fat can become available for this purpose, it must undergo disintegration or disassimilation, and be reabsorbed into the blood. I would not be understood as denying that the adipose, like other tissues of the body, is constantly undergoing that process of gradual molecular destruction, or textural change, which is inseparable from living organized substance, and constitutes the principal condition of its existence. What I desire to convey is, that fat, being an assimilable substance, must be always in the first instance assimilated, and can, under no circumstances, be applied to the maintenance of animal heat before undergoing the twofold process of constructive and destructive assimilation. Amylosaccharine substances are immediately and directly passed off from the blood, and are never assimilated in the proper acceptation of the term. Of the starch taken in as food, however, a certain proportion escapes the converting action of the saliva, and is deposited in the liver, probably in the hepatic cells, whence it is drawn to supply heat when the amount of sugar in the food recently taken happens to be insufficient, or when the body is exposed to highly refrigerating influences." After describing some experiments of his own, Dr. Hayden continued—"The conclusions at which I have arrived, however, from the observations I have been able to make up to the present, may be stated as follows: The amount of fat deposited in the body is regulated by the absolute and relative quantity of oleaginous and saccharine matter in the food taken; both substances taken in a large quantity cause excessive deposits of fat. If the fat taken be in defect, even though the sugar be in excess, no increase in the deposit of fat takes place, but rather a decrease, obviously in consequence of ordinary molecular absorption, to which the adipose, in common with other tissues, is subject, not being counterbalanced by assimilation. If the fat taken be in excess, whilst the sugar is insufficient to meet the immediate wants of the respiratory function, still the deposit of fat may not undergo increase, but the contrary, apparently because a portion of that already deposited must undergo reabsorption into the blood for the purpose of supplying heat. Fat is, therefore, as a heat-producing substance, only supplemental of sugar, which is the ordinary pabulum of respiration. Saliva, like gastric juice, is secreted in quantity strictly proportioned to the immediate wants of the system, and quite irrespectively of the absolute quantity of food taken: a certain proportion of the starch of the food, varying according to the quantity taken and the necessity of respiration, escapes the converting action of the saliva, and is stored up in the liver. This liver-starch is being taken constantly back into the blood to supplement the respiratory elements of the food, and in the blood is converted into sugar, probably next into lactic, and finally into carbonic acid. Hence the presence of sugar, normally, in small proportion, in the blood of the right side of the heart; hence, likewise, its presence in the right side of the heart of animals fed exclusively upon meat, in whose portal blood not a trace of sugar is discoverable."—*Med. Times and Gaz.*, Oct. 1, 1864.

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6. *Physiological Effects of Tobacco.*—Dr. B. W. Richardson communicated to the Physiological Section of the British Association for the advancement of science the results of his inquiries into the physiological effects of tobacco on the human system. Dr. R. is himself said to be a moderate smoker, and he entered upon his investigations without prejudice, and his results must therefore be received with the greater confidence.

The following is a summary of his views:—

"1. The effects that result from smoking are due to different agents imbibed by the smoker, viz., carbonic acid, ammonia, nicotine, a volatile empyreumatic substance, and a bitter extract. The more common effects are traceable to the carbonic acid and ammonia; the rarer and more severe to the nicotine, the empyreumatic substance, and the extract. 2. The effects produced are very transitory, the poisons finding a ready exit from the body. 3. All the evils of smoking are functional in character, and no confirmed smoker can ever be said, so long as he indulges in the habit, to be well; it does not follow, however, that he is becoming the subject of organic and fatal disease because he smokes. 4. Smoking produces disturbances: (*a*) in the blood, causing undue fluidity and change in the red corpuscles; (*b*) on the stomach, giving rise to debility, nausea, and in extreme cases sickness; (*c*) on the heart, producing debility of that organ and irregular action; (*d*) on the organs of sense, causing in the extreme degree dilatation of the pupils of the eye, confusion of vision, bright lines, luminous or cobweb specks, and long retention of images on the retina, with other and analogous symptoms affecting the ear, viz., inability clearly to define sounds, and the annoyance of a sharp ringing sound like a whistle or a bell; (*e*) on the brain, suspending the waste of that organ and oppressing it if it be duly nourished, but soothing it if it be exhausted; (*f*) on the nervous filaments and sympathetic or organic nerves, leading to deficient power in them, and to over-secretion in those surfaces—glands—over which the nerves exert a controlling force; (*g*) on the mucous membrane of the mouth, causing enlargement and soreness of the tonsils—smoker's sore throat—redness, dryness, and occasional peeling off of the membrane, and either unnatural firmness or contraction and sponginess of the gums; (*h*) on the bronchial surface of the lungs when that is already irritable, sustaining the irritation, and increasing the cough. 5. The statements to the effect that tobacco smoke causes specific diseases, such as insanity, epilepsy, St. Vitus's dance, apoplexy, organic diseases of the heart, cancer and consumption, and chronic bronchitis, have been made without any sufficient evidence or reference to facts; all such statements are devoid of truth, and can never accomplish the object which those who offer them have in view. 6. As the human body is maintained alive and in full vigour by its capacity, within certain well-defined limits, to absorb and apply oxygen; as the process of oxidation is most active and most required in those periods of life when the structures of the body are attaining their full development; and as tobacco smoke possesses the power of arresting such oxidation, the habit of smoking is most deleterious to the young, causing in them impairment of growth, premature manhood, and physical degradation."—*Med. Times and Gaz.*, Oct. 1, 1864.

MATERIA MEDICA AND PHARMACY.

7. *Anthelmintic Properties of Benzine.*—Professor MOSLER, of Berlin, has continued his researches on the anthelmintic properties of benzine, which, according to him, takes the first rank amongst all remedies of this kind, and is tolerated by the human system in considerable doses without unpleasant consequences. Large doses of benzine kill the trichinæ of the intestines, and thus prevent the immigration of their progeny into the muscles. Benzine would therefore appear to be the best remedy for the early stage of trichinosis. Professor Mosler has employed benzine largely in the epidemic of that disease which raged last spring in Quedlinburg. At first it was given in "capsules gélatineuses," but this soon proved too expensive and troublesome, and the following formula was therefore adopted:—℞ Benzini, ʒij; succi glycyrrh., mucilag. gummi. arab., āā ℥j; aq. menth, ℥iv; a tablespoonful every hour or two hours (shake the bottle). This preparation agreed very well with the patients. Many of them mentioned that they felt much better after it, that the muscular pains were less severe, etc. They took two drachms per diem for four or six days in succession, and yet, although there was violent fever, no unpleasant results occurred which could have been attributed to the medicine. It seems that the poisonous effects of benzine observed in the first experiments on animals were partly due to the method employed. In those cases benzine was poured into the mouths of the beasts, and part reached the trachea and the lungs, after which fatal pneumonia set in. If, on the contrary, the benzine was mixed with the food, the animals remained in good health. The general results

of the administration of benzine in the epidemic just mentioned will soon be published. Professor Mosler afterwards experimented on four pigs, which were fed with trichinous rabbit's flesh. Pig number 1 was then left without any medicine, number 2 took sulphite of soda, 3 and 4 took benzine. In number 1 severe morbid symptoms set in about a fortnight after infection. The animal became much emaciated and weak on its legs, the eyes were dim, the voice exceedingly hoarse, and it often screamed with pain. The pulse was fast, the skin very hot, the thirst considerable. All these symptoms were entirely wanting in Nos. 3 and 4, which had eaten the same quantity of trichinous meat, but had been treated with benzine a week after infection. From this it was justly concluded that a much larger number of trichinæ had immigrated into the muscles of number 1 than in those of Nos. 3 and 4. In order to be quite certain about this point, twenty days after infection a small piece of the pectoralis-major muscle was excised from the three pigs, and a quantity weighing one-twentieth of a gramme (less than a grain) was found to contain in number 1 about 257 trichinæ, while in number 3 there were 95, and in number 4 the same number. The worms were counted over several times in order to avoid mistakes, which proved very trifling. The morbid symptoms went on increasing in number 1 until three weeks after infection, when Professor Mosler thought of trying whether, by the administration of benzine in that advanced stage of the disorder, benefit might still be obtained. After the first dose had been given the severity of the disorder did no longer increase, and after a few others there was more appetite and less heaviness. The animal took altogether four ounces of benzine within twenty days without any bad results. After that time most of the morbid symptoms had disappeared. A piece of flesh was now excised for ascertaining whether there had been any effect on the trichinæ in the muscles, but they were found to be still living, and even larger doses of benzine, which were subsequently given, killed only a few of them.

Pig number 2 was fed with the same quantity of trichinous rabbit flesh as number 1, but from the seventh day it took daily half an ounce of sulphite of soda with the food for some time. Copious diarrhœa ensued, but no intestinal trichinæ could be found in the feces, so that it would appear that ordinary purgatives have no action on intestinal trichinæ. The symptoms of trichinosis were well-marked in this animal.

Pig number 3 was fed with trichinous meat as before, and had no medicine for eight days, in order that the use of benzine might only be commenced at a time when it is possible, in certain cases, to diagnose trichinosis in man. After the first dose of benzine the animal passed sixteen ascarides, a fresh proof for the anthelmintic properties of the drug. No morbid symptoms appeared, from which it was concluded that benzine had killed, if not all, at least a large number of intestinal trichinæ. This supposition was confirmed by the examination of a piece of flesh excised from the pectoral muscle, and in which the number of trichinæ found was, as has been stated, considerably less than in pigs numbers 1 and 2. The animal continued to take two drachms of benzine per diem for some time, and did exceedingly well.

Pig number 4 was treated much in the same manner, and never fell ill at all. Benzine agreed so well with it that it grew very much, taking at one time two ounces of that drug per diem for five days consecutively. It would therefore appear that a cautious administration of benzine in man cannot be hurtful. Professor Mosler is at present experimenting upon the action of benzine on tapeworm, and it would certainly be a boon if he were to give us a certain remedy for this troublesome parasite which so frequently baffles all our well-meant and energetic therapeutical efforts.—*Med. Times and Gaz.*, Oct. 22, 1864.

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8. *Bromide of Potassium as a Sedative.*—Dr. A. Gubler, physician to the Beaujon Hospital, has been investigating, by experiment and clinical observation, the action of bromide of potassium. He has given it in laryngeal and bronchial affections, in œsophageal spasm, in hysteric and spasmodic cough, in chorea and other nervous disorders, and in heart disease; and sums up his memoir with the following conclusions.

Bromine, in combination as a salt, is not only an anaphrodisiac, or an anæsthetic to the throat; it is a powerful general sedative. Bromide of potassium has generally been preferred; but the preference should probably be given to bromide of sodium, on account of the greater tolerance, on the part of the animal system, of soda-salts, which enter in large proportion into the composition of the tissues of the body. Bromide of potassium, in average daily quantities of about thirty-five grains, in two or three doses, in some mucilage or sugared water, produces a marked sedative effect on the sensory and motor nervous system and on the circulation. As an anæsthetic, it acts more on the internal than on the external integuments, and especially on the isthmus of the fauces, the pharynx, and the genito-urinary passages. The action, however, is not confined to these parts, but extends into the neighbouring regions; especially the œsophagus, larynx, and air-tubes. By this action, painful dysphagia, œsophageal contractions, and spasmodic cough, are calmed. Bromide of potassium acts equally on the nervous centres, as a contrastimulant. It relieves congestive headache, prevents or moderates convulsions, diminishes the excito-motor action of the cord, and relaxes tetanic contractions, while at the same time it restrains reflex action. Under the influence of the alkaline bromide, the action of the heart is moderated and rendered slow, turgescence of the capillaries is diminished, and fever is abated. Diuresis, if it have not already existed, appears on the cessation of febrile excitement. Perspiration, on the other hand, is arrested; and the formation of pus and mucus is diminished. The symptoms of *bromism* are almost exactly the opposite of those of *iodism;* hence bromine may be regarded and used as an antidote to iodine.—*British Medical Journ.*, Sept. 17, from *Bull. Gén. de Thérap.*, July 15 and 30, 1864.

9. *Alkaloids of Peruvian Bark.*—Mr. J. E. HOWARD invites increased attention (*Medical Mirror*, Sept. 1864) to the specific therapeutic effects of the several alkaloids contained in the Cinchonæ. He has been occupied for more than thirty years in the extraction of quinia and other products of these barks, and has largely exhibited the cheaper products with satisfactory results. It is a great desideratum to obtain a cheaper remedy than quinia, and one which shall at the same time be sufficiently powerful to be relied on. Mr. H. is now with this view employing the commercial *muriate of cinchonine*, and has no reason to doubt its efficacy, and though required in larger doses than the sulphate of quinia, it is still cheaper.

"*Cinchonidine* (which must not be confounded with cinchonine) is," says Mr. H., "an alkaloid which experience has led me to value highly. I have treated successfully with this alone the most fatal forms of intermittent fever occurring in this country, called in some districts 'the dead ague,' in which the external exacerbations of fever subside, but the spleen enlarges, and dropsy and death supervene. I may also mention that this must have been the alkaloid which cured the Countess of Cinchon, since the *Cinchona chahuarguera*, to which (by tradition) her cure is ascribed, is specially rich in this product. Moreover, the cases of intermittent fever reported in the *American Journal of the Medical Sciences*, as successfully treated by *quinidine*, were really treated by *cinchonidine*, as I have elsewhere shown.[1] The *real* relationship of *cinchonidine* is to *quinine*, and not to *cinchonine*, as its name unfortunately implies. I am much inclined to believe that cinchonidine produces less cerebral disturbance than quinine, and the late Dr. Royle (of East Indian celebrity), who, at my request, tried several experiments with it, concurred with me in this opinion. If this should prove to be the fact, it would surely be a very important one for the interests of humanity.

"*Quinidine* has, probably, some peculiarity in its action on the system; but this has to be ascertained. It is important that it should be understood that the (so-called) quinidine of commerce is more often wholly or in part cinchonidine.

"*Aricine* has given such discouraging results in my hands, that I have not ventured to employ it. I have been led to suspect emetic qualities in the accompanying yellow colouring matter. The importance of investigation of this alkaloid will appear in the following observations. * * *

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[1] See my "Quinologia" under the head of Cinchona Chahuarguera.

"In the 'Crown barks' generally *cinchonidine* may be regarded as predominating, though in one sort (the *Amarilla del Rey*), quinine is found in considerable quantity. In the 'Gray barks,' *cinchonine* is the prevailing element. In the red barks, quinine, cinchonidine, and cinchonine form a triply compound agency. In the Calisaya (which is employed, in part, for tinctures and decoctions), quinine is the ruling power. In addition to these serviceable barks, there is also a large importation of barks called Peruvian, which are utterly unserviceable, and which nevertheless pass into medical practice. I have shown that, after the time of Dr. Saunders, the spurious *quina nova* took the place of the genuine red bark, leading to the conclusion that fevers had increased in their severity, or else that the red bark was an inferior remedy. There has been more than a little of this imported even of late years. There are several kinds of Peruvian bark in which the only alkaloid is *aricine*, and yet these are rather in favour, and command good prices. I confess I pity the unfortunate consumers.

"It cannot surely be regarded as a matter of indifference whether the patient is absorbing *quinine*, *cinchonine*, *cinchonidine*, *quinidine*, or *aricine*, from the Peruvian barks, to which he is to trust for convalescence; or whether the *quinovic acid* be the alone bitter principle which he receives to promote his recovery, as will be the case if the bark (*quina nova* for instance) be that of a Ladenbergia instead of that of a Cinchona.

"To cut this knot, some propose to give only known preparations, such as citrate of iron and quinine: but then again it is said, and probably with truth, that the effect of the bark itself is somewhat different and, perhaps, better if the patient be so happy as to meet with the kind of bark which suits him. But then who is to secure this auspicious result?

"In treating intermittent fever, experience has led me to find the truth of what Briquet shows, that it is best to trust to the alkaloid *alone*, and to strike a blow with a sufficient quantity of this in order to arrest the disease. I do not, however, advocate giving at a single dose more than, say, five grains of sulphate of quinine, or an equivalent of the other alkaloids, and this repeated three times in twenty-four hours. In seeking to restore the normal state of the constitution after the fever is arrested, the citrate of iron and quinine is very useful; and unless some such treatment is pursued, the ague is very apt to recur, as I have known to happen through a simple shock to the nervous system; but, if the plan I have described be followed, there is no variety of this Protean malady (including what is called 'Brow Ague,' and other singular affections), which I have not found yield to the treatment. The remedy is so sovereign, that, in my opinion, the physician ought not to fail in arresting the paroxysms of intermittent fever, and this, if expense be an object, even without the exhibition of quinine."

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

10. *Defects of Expression (by words, writing, signs) &c., in Diseases of the Nervous System.*—M. Broca has arrived at the conclusion that the faculty of speech resides in the left cerebral hemisphere, and not in the right. The evidence on which he bases this conclusion is supplied by autopsies. Recently, Dr. Hughlings Jackson has brought forward clinical evidence which points in the same direction. He has seen about seventy cases of loss or defect of speech with hemiplegia, and in all but one the hemiplegia was on the right side, indicating, of course, disease of the left side of the brain. This is certainly strange; and the fact that his investigations were quite independent of although subsequent to those of M. Broca renders it more striking. Dr. Jackson, however,

merely states the clinical facts, and hesitates to adopt the conclusion to which they seem to point.

Many words have recently been coined to express the defects of speech met with in practice. As, however, they are more often defects of expression generally than of speech alone, and again, as these defects vary most widely in degree, there is a risk that attempts at precision in names might confuse rather than help inquiry. Dr. Jackson thinks that no single work can define defects which differ so widely from one another. The important point in practice, for purposes of diagnosis, is to determine their clinical association. Now Dr. Jackson finds that defects of language, whether general or particular—in the widest or in the narrowest sense of the word (excluding, of course, inability to talk from loss of power in the machinery of articulation, *i. e.*, lips, tongue, &c., and incoherence)—agree in this, that they are found with hemiplegia on the right side, and not with hemiplegia on the left. To this rule, however, he has recorded three exceptions, one of which occurred in his own practice. This mutual agreement of the symptoms must be kept as carefully in view as their individual differences. Thus, if as at one extreme, a patient cannot utter or write a word, and if, besides, he cannot make a sign by way of reply (loss of the general faculty of language); or if, as at the other extreme, he has simply a difficulty in uttering words (defect of articulate language), the clinical associations are just the same. But there are good grounds for believing that the differences in the symptoms, great as they are, are but divergences in different directions and to varying extents from one common point. For although merely defective utterance may, in a given case, be the sole marked feature of loss of language, and though the patient may be able to write and make signs, yet it will be found that he does so badly, and with very great difficulty. In nearly all cases, then, the *general* faculty of language is somewhat impaired, although in some it is shown nearly altogether by defect of articulate language, and but slightly by defect of other modes of language, as by signs, writing, &c. Recently Dr. Jackson has adopted the simpler word "expression," in preference to "speech" or "language." It defines less, and yet covers more. And if it is not, from its looseness, of any value as a scientific definition in psychology (although the real central thing in all kinds of language is to *express* intellectual propositions), yet it may be safely used as a term in clinical investigation. In each case, however, the defect ought to be described as it affects language by words, by writing, and by signs. The general use of the word "expression" is then simply provisional, and will not prevent our seeking more definite terms for its varieties when we have more clearly learned the real nature and relations of the (at present) rather complex defects it is made to include.

In many of these cases of defective power of expression, with hemiplegia on the right side, there is valvular disease of the heart; and this, with other circumstances, leads to the diagnosis of embolism of the left middle cerebral artery. The damage to the nervous system, therefore, is not limited to any known location of function, but is in the region supplied by a bloodvessel. Dr. Jackson imagines that in some cases fewer, and in others more, of the branches of the middle cerebral artery are plugged; and thus from different "quantities" of brain damage we have different degrees of loss of the power of expression. In some, the supply of blood is cut off from so large a quantity of brain round about the highest part of the motor tract, the corpus striatum—the point of emission of orders of the "will" to the muscles—that the patient seems to have lost the power of intellectual expression altogether. In others so small a part is damaged that he has little more than a difficulty in the executive of articulation—*i. e.*, in getting out his words.

It is impossible to think on this subject, which bears so closely on the question of the duality of the brain, without wondering how it is that we meet with no similar or corresponding defects from disease of the right hemisphere, or (to put it more carefully) with hemiplegia on the left. In no case of hemiplegia on the left, however produced, Dr. Jackson says, has he been able to find any definite mental defect—*i. e.*, any so definite as loss of speech. But it is not a little singular that he has noted that when amaurosis (*i. e.*, the ordinary form of cerebral amaurosis) occurs with hemiplegia, or unilateral convulsion, the left is the side generally affected. Without attaching much importance to these facts as facts, they may be of use to suggest some method in the study of the mental defects which occur with disease of the cerebrum. There can be no question that *at present* the evidence points most strongly to the conclusion that the faculty of expression resides in the left and not in the right hemisphere; for it must be remarked that there is a great amount of negative evidence that damage of the brain in the neighbourhood of the *right* corpus striatum does *not* produce loss of speech in any sense of the word. M. Broca believes that the faculty of articulate language has its seat in the posterior third of the third *left* frontal convolution, which convolution is near to the corpus striatum.

In one case of syphilitic disease of the brain, Dr. Jackson found that the part on the *right*, corresponding to M. Broca's convolution on the *left*, was destroyed, and besides that the hemisphere generally was much softened. The patient could talk perfectly until his death. He had double amaurosis and hemiplegia on the left side. Now, amaurosis is due to disease of a highly specialized nerve of sensation, whilst there are good reasons for believing that defect of articulate language, which M. Broca calls aphemia, is a kind of ataxy of articulation, and, therefore, a disorder of motion. Again, the contrast may be made more general. Sight is a department of general perception, whilst articulate language is a department of general expression. If, then, it should be proved by wider evidence that the faculty of expression resides in one hemisphere, there is no absurdity in raising the question, as to whether perception—its corresponding opposite—may not be seated in the other. In but two cases has Dr. Jackson found both amaurosis and defect of speech together, and in those two, the left and right side of the body had been alternately paralyzed.

It cannot, however, be too prominently stated, that physicians are by no means agreed as to the facts of the subject. Some eminent men state that they meet with defects of speech with hemiplegia on the left as often as with hemiplegia on the right.

Of course no progress can be made if such defects as difficulty of talking from paralysis of the tongue, aphonia from disease of the larynx or its nerves, &c., are confounded with defects of expression. There is a case now in the Westminster Hospital, under the care of Dr. Gibb, which shows well the danger there might be from using terms carelessly. This is the case of a young woman, who, in the popular sense of the word, can scarcely "talk," and she has hemiplegia on the left side. Yet she can *say* anything, and articulates well. The fact is, as Dr. Gibb remarked, it is *voice* that she has lost, articulation (of course in a whisper) and power of expression of ideas remaining good. Dr. Gibb has examined the patient's larynx by the laryngoscope, and finds it healthy. He considers that both the aphonia and the hemiplegia are hysterical.

There is nearly equal risk, on the other hand, that the incoherence of delirium, &c. might be put down as defect of speech. It will, therefore, in discussing the question as to the side affected, be best to choose well-marked and chronic cases. Of course all varieties should receive attention; but there is a practical convenience in studying the subject in chronic and striking cases first. For instance, a case, lately in Guy's Hospital, under the care of Dr. Barlow is well marked; and if a few cases like it, except that the hemiplegia was on the left, were recorded, they would be powerful arguments against the views of M. Broca. In cases of injury to the head much valuable information might be obtained, frequently autopsical as well as clinical. Dr. Jackson has now under his care, a patient who has lost several square inches of bone on the *right* side of his head. It is quite certain that this patient has disease of the brain also in the same position, as he has hemiplegia on the *left* side. His speech is perfect, but he has double amaurosis. In two other cases of hemiplegia from injury to the *left* side of the head, the hemiplegia was on the *right* side, and in each of those cases speech had been lost for some *months* after the accident, but sight was unaffected.—*Lancet*, Nov. 26, 1864.

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11. *New Researches on the Pathology of the Blood.*—In a communication made to the British Medical Association at its last meeting Dr. B. W. RICHARD-

son related a number of inquiries which he had conducted on the pathology of the blood. He referred specially to four points:—

1. The specific gravity of the blood in relation to disease.
2. Fibrinous deposition in the heart.
3. The balance between the column of blood in the lungs and the column of air.
4. Asphyxia commencing in the blood.

On the first of these subjects the author described experiments which went to prove that the exudation of albumen from blood in a shut sac, such as the peritoneum, was sufficient, under certain conditions, to cause exudation of fluid from blood and dropsy, quite independently of inflammation. Next he dwelt on the effects resulting from increasing the specific gravity of blood by adding to it crystalloids such as saline substances and sugars, or bodies that act like crystalloids, specially alcohol. It was maintained that cataract arises from increased specific gravity of blood, and that cirrhosis of the liver is purely a physical change produced from a similar modification of blood.

On the second head, Dr. Richardson dwelt on some new points bearing upon the separation and deposition of fibrin in the heart after surgical operations, and especially after ovariotomy.

On the third head, he treated on the balance of the circulation and the respiration, showing that such balance in health was precisely equal. He detailed various experiments also in which, in animals, emphysema of the lungs resulted immediately, whenever the current of blood was arrested in the pulmonary artery, and other experiments in which congestion of the lungs immediately followed the arrest in the currents of air through the trachea. The relation of these experiments to disease was then explained and illustrated.

On the last head, Dr. Richardson maintained that there was only one mode of death—viz., by arrest in the process of oxidation of blood. He proceeded to point out that it was wrong to confine the term "asphyxia" to mere fault in respiration, inasmuch as there are diseased conditions in which, the breathing being normal, the patient sinks for the sole and simple reason that the blood will not take in the oxygen that is brought to it. In such cases the blood is charged with compounds which by their presence prevent oxygenation, precisely as antiseptics prevent that process out of the body. In typhus, Dr. Richardson said this was the common mode of death, and he called it asphyxia commencing in the blood.—*Med. T. & Gaz.*, Aug. 20th, 1864.

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12. *Diphtheria.*—Mr. JOHN BRIDGER, of Cottenham, communicated to the British Medical Association, at its meeting in August last, an account of an epidemic diphtheria which had prevailed under his observation during the preceding three years. Upwards of three thousand cases fell under his care. The disease was more acute at the commencement than at the present time. The sequelæ were often very serious, viz., pleurisy, pleuro-pneumonia, endocarditis, peritonitis, croup, paralysis, &c. Erysipelas frequently followed, he states; "sometimes commencing at the nostrils, and spreading over the face and head; sometimes from one or both ears, and spreading over the head and face; in a few cases from the anus, umbilicus, penis, or vagina, and extending slowly over the whole body and lower extremities. In the three last mentioned points of commencement it has occurred in infants, who took the disease from their mothers, and showed signs of it, either at birth, or within a few days.

"Women who have the disease previously to or during pregnancy, have their condition modified by it. In some it produces abortion; in some, premature confinement; and in others, hemorrhage or lingering labour; whilst in all puerperal women, for a period of from three to six weeks after delivery, and occurring every few days, there is a discharge of shreddy membranous or glairy matter like uncoagulated white of egg. This has taken place in fifty-two cases; my attention being generally called to it by the patient or nurse as something unusual. The children born of parents affected with diphtheria invariably show signs of it soon after birth. If you look into their throats, you see the tonsils, uvula, and soft palate swollen and red, perhaps slightly œdematous, producing slight hoarseness and cough. This may go on for some days, or even weeks, the child seeming neither well nor ill; when all at once it is taken worse, screams out with pain, and dies in a few minutes. Whenever I have been able to examine the body, I have found that death has been caused by effusion into the pericardium. Altogether, out of this number of cases where diphtheria has been the primary cause, there have been seventy-five deaths; twelve were complicated with scarlet fever; nine with measles; one with confinement and scarlet fever together; one with confinement alone (primipara)."

Mr. Bridger made twenty-four *post-mortem* examinations, and he particularly calls attention to a condition not hitherto noticed of the auriculo-ventricular valves of the heart observed by him in all these cases. This is a "roughened, reddened, thickened appearance of the valve, as if by interstitial deposit, situated midway between the insertion around the ventricular opening and its attachment to the chordæ tendineæ; one or both valves being affected, more or less, according to the severity of the case, and the time elapsing between the symptoms of heart affection and death.

"The symptoms denoting this affection of the heart may come on early or late; generally late, several cases having occurred where, to all appearances, the patient has been well. It is ushered in and may be diagnosed by the following symptoms: an anxious countenance; hurried respiration; a rapid pulse, from 120 to 170; tenderness over the præcordial region; scarcely any pain, excepting on pressure. In four cases there was a slight murmur at the apex of the heart; in two of these it subsided in a week, in one remained permanent for some months, and one case is now under treatment. The duration of the urgent symptoms varies from three to seven days.

"I have not noted the exact number of cases in which the heart has been so affected, but can say in at least a hundred; and in some the affection came on so severely, that the symptoms were more like collapse, with cold, clammy perspirations, and requiring the immediate administration of diffusible stimulants, very frequently repeated, every ten, fifteen, or twenty minutes. I also apply flying sinapisms more or less frequently, as required; repeating them at least twice daily, until the pulse subsides, and the tenderness on pressure has gone off. I also give internally the steel mixture with nitrate of potass every one, two, or three hours; a small dose of gray powder and compound ipecacuanha powder at bedtime every night. I also give in addition, to those cases with a *bruit* and accompanied by pain, three grains of the extract of conium every four or six hours in a pill, until the pain subsides."

In the treatment, Mr. B. principally relies, he says, "on the tincture of the sesquichloride of iron, but combine with it the acetate of ammonia and spirits of nitrous ether, in order to keep the skin and kidneys active. When there are glandular enlargements, I add to these the iodide of potassium; and should there be also an œdematous condition, together with glandular enlargements, both the iodide of potassium and the chlorate of potass. If the tongue be much loaded, and the patient feel at all sick, I generally give a stimulating emetic of equal parts of sulphate of zinc and ipecacuan; and throughout the active stage of the disease, an alterative dose of calomel or gray powder combined with the compound ipecacuan every night at bedtime. I apply emollients or stimulating fomentations to the throat externally, directing the patient to gargle with warm water or weak vinegar and water frequently, unless there be very much fetor, then I substitute a weak solution of chlorinated soda. The forcible removal of membrane and the application of acids or caustic are, I think, quite useless; in fact, I believe they are injurious, producing shock, and afterwards greater depression. Perfect rest and quiet are necessary. Beef-tea and stimulants (either brandy or wine, as best suited to the case) are given; and when indications of approaching paralysis show themselves, I add to the steel mixture small doses of the solution of strychnine; thus, I believe, in very many cases obtaining a more rapid convalescence than can be obtained by any other tonic, such as quinine, bark, and the mineral acids, all of which I have tried. Acids, I find, are not generally tolerated.

"In some special cases, where there is a large amount of semi-fluid fetid discharge from the mouth and nostrils, the solution of chlorine (made by adding dilute hydrochloric acid to the chlorate of potass) in combination with steel, and given every two or three hours, I have found to act almost magically in checking this discharge, and producing a rapid convalescence.

"I find, generally, that for young children the chlorate of potass with steel is not only the most pleasant, but the best remedy, bringing back the colour to the lips and cheeks sooner than anything else.

"In cases of croup, I give a grain of calomel and two grains of ipecacuan as a mild emetic every two, three, or four hours; and during the intervals, the steel mixture with nitrate of potass, and small doses of chloroform; applying externally, to the throat and chest, fomentations of hot mustard and water. The calomel and ipecacuan are discontinued as soon as the urgent symptoms pass off; but the steel is continued, with chlorate instead of nitrate of potass."—*British Medical Journal*, Oct. 22, 1864.

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13. *Bromide of Potassium in Epilepsy.*—Dr. ROBERT M'DONNELL adds his testimony (*Dublin Quarterly Jour. Med. Sci.*, Feb. 1864) to that of Sir Charles Locock, Dr. Brown-Séquard, Dr. C. B. Radcliffe and others as to the efficacy of the bromide in certain cases of epilepsy. He relates several cases, and states that these with other similar cases have led him to the belief that we have in the bromide of potassium a remedy of considerable efficacy in epileptiform disease when connected with uterine derangement, but he admits that it will not succeed in all cases of this kind.

"With reference to the dose," he says, "from a not inconsiderable experience in the use of this medicine, I can state that it may be given with perfect confidence and safety, in much larger quantities than it is usually prescribed. I have given thirty or forty grains, and even more, three times a-day, for months without observing any bad results; and of this I am certain, that often such a dose as ten grains three times a day is too small to develop any good result.

"Although the independent testimony of several practitioners points to cases of epilepsy, with derangement of the uterine functions, as those in which the bromide of potassium is most likely to be beneficial, yet there are others in which its effects are unquestionably good."

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14. *Therapeutic Value of the Alkaline and Earthy Sulphites in the Treatment of Catalytic Diseases.*—H. R. DERICCI, deeply impressed with the value of the discovery of Prof. Polli, relative to the action of the sulphites in certain forms of disease, has devoted much time to the investigation of the therapeutic properties of these salts. He first tried them on himself, and finding them harmless even in doses of a scruple five or six times a day, he began to administer them in every case where he thought a catalytic poison might be a cause of disease. In the *Dublin Quarterly Journal of Medical Science*, for August, 1864, he relates some cases which he conceives to illustrate the remedial powers of the sulphites.

"The first case I shall describe," he observes, "is one of great interest and value in a clinical point of view; it was undoubtedly a case of infection from an animal poison. The patient was almost given over as lost, so severe were the symptoms of the disorder; yet the patient recovered, and the treatment consisted solely in the administration of the bisulphite of soda, in full, repeated, and continued doses.

A lady of about forty-five years of age, of sound constitution, and in the enjoyment of excellent health, was suddenly called, about a year ago, to the death-bed of one who was very dear to her. That death-bed was fearfully sudden and unexpected, and that poor lady could not be persuaded, long after death had indubitably taken place, that the spirit of the beloved one had really fled. She would not leave the corpse; she threw herself on it, and kissed it over and over again, and could not be induced to leave it, even when the discoloration of the skin and the offensive smell of rapidly-advancing decomposition gave ample testimony of the reality of death. The burial was performed two days after death, owing to the rapid decomposition of the body; and soon after the funeral, I was hastily summoned to the bedside of this lady, whom I found in the following condition. It was about five in the morning when I entered the bedroom. She had gone to bed the night before quite calm and resigned, and on the previous day she had partaken fairly of food, but had not eaten anything which could in any way account for the state in which I found her, of which the following is a fair sketch: The windows of the bedroom being open, the morning light streamed freely into the room, and as I approached the foot of the bed I had a full view of the patient's face. To those of my readers who, like myself, have been familiar with the victims of cholera I shall simply say that the patient looked like one in cholera, in the stage of collapse. To those who have not yet had the melancholy opportunity of witnessing a case of that terrible disease I shall say that I hardly recognized my friend, so altered, and pinched, and ghastly were her features. Her eyes were sunk, and surrounded by a lead-coloured zone; her cheeks, which, but a day before, were plump and ruddy, were now hollow and sunk; her eyes were glassy; her pulse scarcely to be felt, the surface of the body cold; her breath cold; her tongue cold; her voice low and husky; her faculties perfectly clear. She now lay quite prostrate on her back; but for some hours previously had suffered greatly from vomiting, cramps, and diarrhœa, which was of the characteristic rice-water appearance always observed in cholera. I at once administered a full supply of hot brandy and water, ordered turpentine stupes to the abdomen and limbs, treating the case exactly as one of Asiatic cholera; and, being fully alive to the grave nature of the attack, requested for further advice, and at once sent off for my valued friend, the late Dr. Mayne. At first I felt singularly at a loss how to account for so sudden and so severe an attack of what seemed to be a genuine case of Asiatic cholera. So true was it to symptoms that, when Dr. Mayne looked at the patient, he whispered to me: 'If cholera were in the country, one would not hesitate to give this case a name.' The clue to the disease was, however, given to me, in a few words, by the patient herself. As soon as she had taken the brandy she said to me: 'The smell of the body was dreadful; I cannot get rid of it in any way;' and immediately she began to retch. She had given me the key, and the mystery of her case was solved. It was no doubt a case of putrid infection —of septicæmia; and if there was any truth in the 'sulphite' theory it should prove of value in such a case as this. I at once ordered a strong solution of bisulphite of soda in infusion of quassia, with tincture of bitter orange-peel and Battley's sedative—two drachms of the bisulphite to the ounce—and gave it in large teaspoonful doses, every half-hour at first, and then every hour, each dose containing nearly twenty grains of the bisulphite. I watched this case incessantly myself, day and night, and the result was most satisfactory. All the symptoms by degrees abated, and in a very few days the patient was fully convalescent. Dr. Mayne, who had anxiously watched this case with myself, was so impressed with the result obtained that he told me he would give the remedy a full trial in every case of scarlatina that should come under his care; and, in addition, promised (at my suggestion) that he would prescribe a dose of the sulphites daily to every healthy member of the family in which there was a case of scarlatina, to test its value as a prophylactic; for if a sulphite could destroy a catalytic principle, even when developed in the system, it should also have the power of preventing the development of that principle from the commencement.

As I stated above, the lady recovered, and, apparently, was restored to absolute health; she, however, complained to me occasionally of wandering pain, and general *malaise* at times, which she could not account for. About five months after her recovery she hurt her leg; it was a very trifling abrasion, but it assumed an angry look, and seemed determined not to heal, when, at the end of two months, she broke out all over with an extraordinary eruption, more like erythema-nodosum than anything else, when I at once placed her again on bisulphite of soda, in the supposition that some of the poison was still lurking in her blood, when the sore in the leg rapidly healed and the eruption disappeared, leaving the patient perfectly well.

The next two cases in my list were well-marked types of measles. I shall not take up the time of my readers by giving the details of them. I shall merely state that they were severe cases; that they were treated solely with bisulphite of soda, in scruple doses, every second or third hour, and that both cases grew rapidly well.

The fourth case is one of poisoned wound. A. B., aged about thirty-five, a gardener, was grafting a cactus, and in carelessly handling such a thorny plant, got the back of his left hand severely stung in different places. He plucked out as many of the spines as he could discover, and thought no more about the matter; but in the course of twelve hours or so the hand began to swell and be painful. He at once wrapped it up in a poultice; but the pain and swelling not abating, his employer sent him to me, three days after he had been stung. I found his hand enormously swelled, of a dusky purple colour, with large bullæ over the dorsum; the forearm also swelled, though not discoloured, but presenting several longitudinal red lines running up to the elbow. The man complained of great pain locally, of intense thirst, headache, loss of appetite, shivering, and general feeling of sickness. His tongue was furred and brown. He had, of his own accord, taken a dose of senna and salts that morning. I at once made an incision in the dorsum of the hand, and some pus came out. It was not, however, like cutting into an abscess—no gushing of matter took place, only an oozing, like as if I had cut into a sponge saturated with pus. I therefore made a second incision, parallel to the first, from which some more pus came out; ordered him to wrap up the hand in a large linseed-meal poultice, and prescribed the bisulphite of soda, in scruple doses, every second hour. I desired the man to keep quiet at home—without, however, ordering him to keep his bed; directed him to take light nutritious food, and to drink two pints of XX porter in the day. The following day the hand looked better; it was less swollen and purple, and the pus was in larger quantity and better looking. The man felt also better; he had less thirst, and had only had two slight shiverings. The bowels not having been freed, I ordered him some sulphur, with magnesia and scammony, as an aperient, and to persist with the bisulphite, taking it now every third hour. The following day the man was so much improved that he called on me. The hand looked still better; the incisions which I had made had ulcerated somewhat round their edges, but the suppuration was free, and the pus seemed quite healthy; there was no pain in the arm, and the red lines were very much paler. Matters looking so very much better, I desired the man to take the sulphite only three times in the twenty-four hours; to take a good allowance of food; to stay much in the open air; but to still keep the arm in a sling, and the hand wrapped in a poultice. Two days later he again came; when, finding that all swelling had subsided, all pain gone, all red lines disappeared, the sore inclined to granulate, I stopped the poultice, and desired him to dress the hand with some warm dressing, containing a little balsam of Peru, and to take one scruple of the bisulphite twice a day. Two days after the man returned to me, not looking as well as at the previous visit. He had a yellowish tinge in his skin; his tongue was foul; he complained of chilliness, almost amounting to shivering, and the sore at the back of the hand looked unhealthy and angry. On stripping the arm, the red lines were again visible, but of a very pale red; while above the elbow, from its bend to the axilla, a hard, knotty, and extremely painful cord could be felt and seen running up parallel to the brachial artery. I at once returned to the primary doses of bisulphite, wrapped up the hand in a poultice, and watched to see what the result would be. The man immediately began to mend, and in four days not a trace of hardness was to be felt. Fearing, however, a relapse, I continued administering four scruples of bisulphite daily for ten days longer, by which time the hand was perfectly healed, and the man returned to his work.

Two better cases for testing the effects of sulphites could not possibly have been selected; in both cases the disease clearly resulted from the working of a poisonous element in the blood, evidently introduced from without in the first case, whilst it may in the second case have originated within the system subsequent to the stinging with the thorns, if one does not feel justified in considering cactus thorns as poisonous of themselves; be this, however, as it may, the second case was as clearly one of purulent absorption as the first was of putrid infection—the red lines up the arm marking the course of the inflamed lymphatics as the hard knotty condition of the veins denoting the phlebitic inflammation. Both were treated solely with sulphites, and both completely recovered. It would be great presumption, no doubt, to say that in both cases the patients would have lost their lives except for the saving properties of the bisulphite of soda administered; but I still cannot avoid believing that the sulphurous acid did prevent the spreading of the catalytic principle by rendering it incapable of reproducing itself;[1] and, while keeping it in abeyance, allowed time for its elimination by the ordinary powers of nature; and I think we have a confirmation of this view in the occurrence of a relapse in both cases, where it would appear as if, when the bisulphite was stopped, all the poison had not yet been eliminated, the blood disease breaking out again the moment that the poison was freed of its antagonist; and a cure being effected by administering more of anti-catalytic remedy until every trace of the animal poison was eliminated."

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15. *Chloroform in the Treatment of Asthma.*—Dr. Hyde Salter, whose experience in the treatment of asthma is so very extensive, asserts (*Lancet*, Nov. 5, 1864), that "the inhalation of chloroform is, beyond doubt, one of the most powerful methods of the treatment of the asthmatic paroxysm that we possess, as it is, also, necessarily, one of the most recent. Many patients have an objection to it, and there is the practical difficulty of the necessity, or the supposed necessity, of the presence of the medical attendant for its safe administration; and therefore in a great many of my cases patients have preferred using other remedies, and have not tried it. But I have notes of thirteen cases in which I have watched its employment, in none of which was it inoperative; in twelve it did good, in one it did positive harm. But I believe this last case is extremely rare, and that not in one case in fifty or a hundred would chloroform increase the asthmatic spasm; of all the cases in which I have known or heard of its being given, I have never heard, except in this case, of its increasing the asthma.

"A more common fault of it, and a very serious fault, is that the relief which it gives is transient, and in many cases merely coextensive with the insensibility that is produced. Indeed, it is the *rule* for the beneficial effect of the chloroform to pass off, in a greater or less degree, with the insensibility. This, however, is not always the case, for in some instances when the insensibility passes off the asthma does not reappear; in some the relief is produced without any insensibility whatever; and in some a very small dose is sufficient to give relief, the patient immediately passing into a tranquil sleep, which may continue for hours, and from which he will wake with the asthma gone, although the original dose was far short of enough to produce the true chloroform sleep.

"There can be no doubt, I think, that chloroform dissipates the asthmatic spasm by relaxing muscular contraction, just as it will dissipate hysterical contraction of the *rectus abdominis*, and thus disperse a phantom tumour, and that it acts through the general nervous system. But I have seen one case, which I shall relate, in which it seemed to act directly on the bronchial muscle. I conclude this to have been so because I think the effect was too immediate for it to have taken place *via* the circulation and the general nervous system: the first act of inspiration would be accompanied with a sensible relief long before the blood charged with the chloroform could have reached the nervous centres.

"Patients and their friends have often asked me if there was not danger in giving such an agent as chloroform in the height of an asthmatic paroxysm. And truly, looking at the alarming state of semi-asphyxia to which the asthmatic paroxysm often amounts—the turgid face, the small pulse, the struggling respiratory muscles, the almost absolute standstill to which both respiration and circulation are brought—one would be apt to think that it would take very little more to stop both the one and the other, and that it was not exactly the condition for which to administer a drug having so depressing an influence on both these functions. I can only say, however, that I have given chloroform in the very agony of the worst attacks; that so far from fearing it under such circumstances, it has been to relieve the intensest asthma—that which nothing else would reach—that I have most given it, and that I have never seen any bad effects from it. Indeed, the immediate and direct effect of the chloroform is to remove that which is the whole cause of the asphyxial stoppage—the bronchial spasm—and to set the pulmonary circulation free. No sooner does it enable the patient to fill his lungs than the loaded right heart disburdens itself, the lividity and venous turgescence disappear, and the pulse regains its normal volume. The intensity of asthmatic asphyxia, so far from being a reason against the administration of chloroform, is the great reason for its immediate employment. I grant that if the same amount of lung-stoppage depended on any other cause than bronchial spasm (at least on any cause that chloroform would not relieve), its administration would be highly dangerous.

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[1] The action of the sulphites on zymotic or catalytic principles is very peculiar; it does not seem to kill them outright, but only to neutralize their action for the time being, so that in treating a case depending on a catalytic poison a relapse may be surely expected if the remedy is discontinued too soon, and before the powers of nature have been able to eliminate it completely from the system.

"I may add that my experience does not induce me to believe that the presence of valvular disease, or muscular weakness of heart, adds anything to the danger of chloroform, unless these conditions exist to such an extent as materially to affect the circulation. I believe that chloroform may be as safely given to a man with an aortic bruit as to one without one, provided there be no *symptoms* proper. I believe the circumstance that determines whether chloroform shall exercise a fatal influence on the heart's action is, not the presence or absence of organic heart disease, but some idiosyncrasy of nervous organization."

On the whole, his experience of chloroform induces him to conclude:—

"That it holds a high place amongst the remedies of asthma; that there is probably no one agent that relieves in so large a number of cases.

"That it operates with very various completeness in different cases.

"That even where it does not *cure*, it is of great value by affording a temporary respite.

"That no amount of asthmatic dyspnœa or asphyxia is any bar to its use.

"That if given constantly, however, in large doses, for a long period, a state of things arises which does, in my opinion, constitute a bar to its continuance."

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16. *Erodium Cicutarium in Dropsy.*—Dr. W. ABBOTTS SMITH highly extols (*Medical Mirror*, Sept. 1864) the erodium in the treatment of dropsy. "The form," he says, "in which I have generally employed this remedy is that of decoction, which is best made by placing two ounces of the dried plant in three pints of boiling water, which should be allowed to simmer until the quantity of fluid is reduced to two pints; the remaining liquid should then be poured off and strained, so as to render it fit for use. An extract has been prepared by Messrs. Clay and Abraham, of Liverpool, but my experience of that preparation is too limited to allow of my speaking decisively of its merits.

"I do not, of course, advocate the substitution of erodium for all other remedies and for the treatment of dropsy, as this disease depends upon so many different causes that it would be absurd to suppose that a specific could be discovered for every form of dropsy. I believe, however, that it is often worthy of a trial, and that it will be found a serviceable adjunct to other plans of treatment, especially in the large class of cases of dropsy in which, although we may feel that diuretics would greatly facilitate the cure, we yet hesitate to resort to their use, owing to the serious complications which not unfrequently follow the administration of those commonly employed, through their excessively stimulating action upon the kidneys."

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17. *Iodide of Potassium as an Anti-lactescent.*—Dr. F. H. MORRIS, in consequence of the unsatisfactory results he has obtained from the external application of belladonna in arresting the secretion of milk, was induced to try the iodide of potassium, as recommended by M. Roussel, of Bordeaux, and he states (*Lancet*, Aug. 13, 1864) that he has resorted to its use in upwards of a dozen cases, during the last five years, where it has been advisable to arrest the secretion—*e. g.*, where the child has been stillborn, or has died a few days after birth; where, from sore nipples, injury to the breast from prior abscess, or from some accidental cause, congestion of the breast has been set up, and lacteal abscess threatened—and in no instance has he been disappointed, even when belladonna has failed to afford relief.

The plan he adopts is to give three grains of the iodide in an ordinary saline draught every three or four hours. In from twenty-four to thirty-six hours the fever and engorgement have ceased, and in from two to three days all tumefaction has subsided, even where abscess seemed unavoidable.

18. *Treatment of Malarious Fevers by Subcutaneous Injection of Solution of Quinia.*—Mr. Moore, of the Bombay Service, states (*The Indian Annals of Medical Science*, April, 1864) that he has been latterly using quinia hypodermetically for the cure of malarious fevers with success.

"I use," he says, "the strongest solution of quinine which can be prepared, viz., thirty grains of quinine, ten or twelve drops of sulphuric acid, and half an ounce of water. Of this, previously strained, I inject from half a drachm to a drachm, the former quantity containing somewhat less than four grains of the active agent. With the exception of a little sulphate of soda, if the bowels are confined, I have used no other remedies, in complicated cases of any type of malarious fever. When the spleen is enlarged, or a leucocythemic condition manifest, I prescribe, as an additional curative agent, one or other of the preparations of iron.

I generally inject beneath the skin of the outer belly of the triceps, and sometimes over the deltoid. The operation, however, is equally effective on the thigh or calf, and in cases of large spleen the action of the remedy appears intensified, by injecting over that organ. I use a small glass syringe furnished with a silver point, and introduce the latter beneath the integument for half an inch or less. The pain is not more than the prick of a needle, and indeed is often less objected to than the bitter taste of quinine. I have never observed the slightest irritation follow the operation excepting when performed with a small trocar and common glass syringe; and when quinine has been used in *suspension*, and not in *solution*. I therefore insist on the use of a proper instrument, and on perfect solution of the alkaloid. If the quinine is not invisible, the preparation is unfit for use; the syringe becomes clogged, and the areolar tissue does not appear able to absorb the solid material which, hence, creates irritation.

The best time to inject is shortly before the expected cold fit, but it may be done during the first stage with the effect of lessening and occasionally stopping the paroxysm. When an accession is expected during the day, injection in the morning will, almost invariably, prevent the attack.

In cases of remittent I have endeavoured to inject during the remission, but do not wait for this period. In severe cases, the injection should be repeated at intervals of four, six, or eight hours.

I believe four or five grains of quinine, injected beneath the integument, are equal in their effects to five or six times that amount taken into the stomach; also that the results are more certain, and that relapsing attacks will be found to be less common; while the œconomy of the treatment is self-evident.

I have now injected a considerable number of cases in the European General Hospital, Bombay, and elsewhere, and find the number of those who lose their fever after the first injection is upwards of 60 per cent. of all classes of intermittents. Some cases, however, require two, three, or four injections, and remittent attacks a larger number."

19. *Treatment of Albuminuria in Children.*—Dr. W. H. Dickinson, in an interesting paper (*Edinburgh Medical Journal*, September, 1864), remarks that the only state of disease to which the substance of the kidney is liable during childhood, is that which gives increase of bulk with a smooth mottled exterior, the fundamental change in such cases being an inflammatory state of the tubules, in consequence of which they become choked up by an excess of their own epithelial growth. When these channels are enabled to discharge their contents, the disease will soon be at an end.

The mechanical obstruction of the tubes is the only event to be feared. If the complaint proves fatal, it is in consequence of this occurrence. It is this which interferes with the formation of urine, occasions the accumulation of its components in the blood, and is the source of all the evils to which the victims of the disease are liable. It must be the aim of treatment to keep the tubes clear; this done, the disorder will right itself. The increased vascularity will subside when free secretion is possible; and, if nothing is done to keep up the irritation of the gland, the catarrh will soon be at an end.

The indication, Dr. D. maintains, is to increase the quantity of fluid which washes the tubes, without doing anything which can produce local irritation.

Since 1860 Dr. D. has adopted a plan of treatment founded on these principles, and with very favourable results.

"Every case of albuminuria in children," he says, "which I have had to treat since October, 1860, has been subjected to the same regimen, though in some cases the dropsy was so great as to seem to prohibit fluids. Notes have been kept of twenty-six cases, most of which were severe. Many others, of less import, have come and gone among out-patients, and left no record. All have been restricted to a fluid diet, which has been of a nutritious character. Besides this, a certain quantity of spring water, varying from two to four pints, has been administered in the twenty-four hours. In three of the cases no other remedy was used. In the remainder the action of the water has been seconded by small doses of infusion of digitalis, or more rarely of acetate of potassa. Lastly, when the active symptoms have disappeared, iron has been given, either as sesquichloride or acetate.

"The results may be stated generally. Of the twenty-six cases thus treated, twenty-two were known to have recovered and to have got rid of every trace of albumen. Three improved greatly, and had little evidence of disease excepting slightly albuminous urine, when they ceased to attend the hospital and were lost sight of. The remaining case ceased to be my patient, and, as I learned, eventually died. Thus, out of twenty-six cases twenty-five are believed to have recovered, which result is known to have been completed in twenty-two. Many of the cases were of the greatest severity, such that before the adoption of this system of treatment no expectation would have been held of their recovery."

"It was found," Dr. D. states, "that the use of the water when given under the circumstances stated, never increased the dropsy, but the contrary. It was usual, however, when the œdema was excessive, to let the digitalis set up a certain amount of diuresis before the full quantity of water was ordered. Many children take it eagerly, particularly in the early stages of the disease. The urine was often observed to undergo a notable increase in the quantity of renal epithelium which it deposited, and the albumen usually quickly lessened in greater proportion than could be explained by the increase in the quantity of the urine.

"It was supposed, in one or two cases, not under my own care, that the treatment had a tendency to encourage hæmaturia; and although I have not observed this myself, yet it must be admitted that such an occurrence is not unlikely. If the kidney be congested, the escape of blood is a natural means of relief. This cannot take place if the tubules are obstructed through which the blood must come. When, therefore, the plugs are washed out it is conceivable that an evacuation should take place which before was hindered."

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20. *Some Points in the Treatment of Diabetes.*—Dr. F. E. ANSTIE called the attention of the members of the British Medical Association, at their meeting in August last, to one or two practical matters in connection with diabetes.

"The fact," he remarked, "has long been recognized, that great good may be effected by the regular use of a diet in which the nitrogenous matters shall be represented, for the most part, by meat, and the hydrogen and carbon by some form of oily food. It is necessary to avoid the administration of the hydrates of carbon which enter into the composition of any ordinary diet; since, in the peculiar state of the system which distinguishes this disease, unchanged sugar would be left to circulate in such large proportions in the systemic blood, that the latter fluid would infallibly exert an irritant influence on the kidney, and provoke a saccharine diuresis. Hydrogen and carbon must, therefore, be administered in the form of oil or fat rather than of starch or sugar; and it has been stated that it is not only necessary to adopt this kind of regimen; but that the stomachs of diabetic patients easily accept oleaginous food."

During the last four years Dr. A. has met with several instances in which sufferers from diabetes not only did not readily accept, but positively loathed almost every kind of oleaginous food which could be proposed to them. This singular loathing of an aliment which is especially necessary for the patient's welfare, reminds us of the similar peculiarity which Dr. Edward Smith has noted in a large proportion of phthisical persons, and which Dr. Radcliffe has observed in the sufferers from neuralgia. It is to be met with firmness and perseverance on the part of the medical attendant, who must try one form of fatty food after another, till he does find one which the patient will take. In several instances. Dr. A. has tried everything in vain; till, at last, pure cream, taken in pretty large quantity, has fulfilled the desired indication. In another case, the almond biscuits proposed by Dr. Pavy answered very well.

When this dietary treatment is neglected evil consequences ensue, to which Dr. A. calls especial attention.

"These are, of course, partly seen in the emaciation of the patient; but by far the most serious effect is the severe nervous distress which soon begins to afflict him. Nearly all these cases are distinguished by a persistent and most troublesome insomnia; and I have now attended several such patients in whom this condition had brought about the habit of opium-eating. The effect of this practice is peculiar.

"The sufferer from diabetes quickly finds out that a small dose of opium is of no good to him; the fact being that, with the abnormal flow of urine which constantly goes on, a considerable proportion of each dose is quickly eliminated from the system. Accordingly, he quickly advances to the use of a quantity of opium equivalent, perhaps, to from four or five to twenty grains daily. Having found the level of opium-consumption which gives him comfort, he does not necessarily increase the dose any further; but remains, perhaps, stationary for many months, or even years, at the same dose."

Where this habit of opium-taking has been fully formed, Dr. A. states there is great risk of danger in suddenly stopping the practice.

"Under such circumstances, both the nervous distress and the excretion of sugar are apt to increase to an alarming extent.

"On the other hand, there is no doubt in my mind that, where the patient has advanced to the use of truly narcotic doses of opium (a fact which may be known by his suffering distinct depression and languor, with great contraction of the pupils, about half an hour after taking a dose), he is putting himself in no little peril. True narcotic or paralyzing action has always a tendency to aggravate diabetes; and opium, given in large doses, shares, in this respect, the properties of the anæsthetics, chloroform and ether. Whenever, therefore, the patient informs us that he has carried opium-eating to an extent which involves any depressive effects, we are bound to interfere at once.

"The only true substitute for narcotic stimulants, where a diabetic patient has got to rely upon them, is the speedy adoption of a dietary calculated to improve the special nutrition of the nervous system. It is here that we particularly need to insist upon the use of a high proportion of fatty ingredients in the daily food, and (where the stomach will bear it) the medicinal employment of cod-liver oil. There is one other ingredient of nervous tissue, which is, also, not improbably indicated in these cases—I mean phosphorus. Acting on this idea, I have several times administered this remedy, with decidedly good effect; the form which I have selected is that of the hypophosphite of soda or lime, which I agree with Dr. Radcliffe in believing to be by far the most efficient preparation of phosphorus, where we desire a food-tonic to the nervous system."

Dr. A. considers, however, that the habit of opium-eating is not to be rashly interfered with, until, at least, a greatly improved dietary has been established. "The truth," he says, "appears to be that the instinct of opium-eating, dangerous as it may be, is one which has not unfrequently arrested disease at a critical moment when it was about to assume a new and more serious development. It is well known that this practice has a tendency to arrest commencing phthisis; and there is little doubt that, when not carried to excess, it has had this effect in the case of diabetic patients, who, from defective diet and other sources of depression, would almost infallibly have developed tubercle. The true moral of this observation should be an increased solicitude for that sort of improvement in the nutrition of the patient which would do away with the nervous distress, which is, after all, the central and most threatening feature in the clinical history of diabetes; and in comparison with which, the elimination of sugar and the waste of fatty tissues are but secondary and unimportant matters. A considerable proportion of diabetic patients are, I imagine, practically starved; and this notwithstanding a nominally high standard of diet; simply from the need of a more plentiful supply of fat than is administered to them. Mere animal diet, or animal diet *plus* gluten bread and the less starchy vegetables, will not fill the place of this—nor will anything else."—*British Med. Journ.*, Sept. 17, 1864.

21. *Hereditary Occurrence of Diabetes Mellitus.*—Dr. Moser relates that a peasant woman, aged 47, consulted him stating that during three weeks she had suffered from intense thirst and passed large quantities of urine. She added that on tasting her urine she found it to be sweet, and that her father, his mother, and two of his sisters had died of diabetes. Examining some urine which she passed in his presence, he found that it exhibited a specific gravity of 1045° and contained a great deal of sugar. Three weeks later the son of this woman, a well-grown, strong lad of 15, exhibited the same symptom, his urine containing also much sugar and having a specific gravity of 1040. Thus diabetes was present in four immediately succeeding generations of this family. —*Med. Times and Gaz.*, Oct. 22, from *Berlin Med. Woch.*, No. 27.

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22. *Calculous Diseases in Russia.*—Dr. Klein observes (*Langenbeck's Archiv.*, Bd. v. No. 1), that while so many statistical accounts have been published in France, England, and Germany, with respect to the prevalence of calculous affections in these countries, and the results of the different modes of treatment, little beyond mere hearsay has transpired with regard to Russia. Whatever may be the cause of this, it has not arisen from want of material; and having resided for several years as assistant in the Moscow Surgical Clinic, the author is desirous of contributing something towards supplying a desideratum. He believes that in no country is lithiasis more prevalent than in the centre of European Russia, the dwellers in the upper region of the Volga being especially liable to it. The northern and southern portions of the empire furnish a smaller contingent, while in the western provinces the disease is rare. The hospitals of the great towns, especially those of Moscow and Kasan, are the great resorts of these patients; so that, for example, at certain times of the year, a fifth part of the entire number of the patients of the Moscow Surgical Clinic consists of stone cases, more than sixty of these per annum applying for treatment. The great bulk of these persons belong to the class of country people, children being three times more numerous than adults, while so rare is the disease among females, that of 1792 patients treated during the years 1822–60 only four were females. The composition of the calculus is usually compound, pure uric acid or oxalate of lime calculi being rarely met with. The nucleus is usually composed of uric acid and its salts, which is succeeded, in the great majority of cases, by oxalate of lime, while the phosphates often forming the almost entire calculus in other cases, furnish only the outer layers. In Russia, uric acid calculi are found much less often than in the rest of Europe, the oxalates and phosphates being much more frequently met with. It is to be presumed that the almost exclusive use of vegetable food and sour drinks by the peasantry may contribute to the prevalence of the oxalates, although that other unknown causes are in operation is seen by the fact of the disease being met with soon after birth and during lactation.

It often happens that adults only apply to the hospital when the disease has become too advanced to admit of an operation being performed, and even in children the stone has frequently been allowed to attain a large size. Chiefly in consequence of this delay in seeking relief, lithotomy has usually been the operation resorted to. Unfortunately, the statistics of the Russian hospitals have not as yet been published, and the author is obliged to confine himself to a statement of the results obtained at some of the Moscow hospitals, as reported by Dr. Bassoff or observed by himself. These figures are, however, larger than those published in English and French treatises, and refer to 2968 cases treated in 1804–41, and to 1518 treated in 1822–60, making a total of 4486 cases. In the first series of operations, there were 2694 recoveries and 274 deaths; in the second, 1240 recoveries and 278 deaths—*i. e.*, a total of 4486 cases, with 3934 recoveries and 552 deaths. This amount of success, which the author has good reason to believe has been also attained in other Russian hospitals, is somewhat superior to that obtained by English and French operators, and is in a great measure due to the large proportion of children which furnished the cases operated upon. Lithotrity, up to 1860, has been performed in the Moscow Hospital upon 222 patients. In 24 cases it had to be supplemented by lithotomy, 19 of the patients dying, and 5 recovering. Of the other 198 cases, complete recovery took place in 167, and 31 proved fatal. The proportion of deaths (1 in 6.35) was greater than that attendant upon lithotomy (1 in 8), the greater ages of the patients submitted to it having, however, to be borne in mind. In 62 cases, occurring in patients from one to fifteen years of age, 6 only terminated fatally. In 24 cases, a single *séance* sufficed for the removal of the entire stone, which in several instances measured eleven lines. As to the cause of death after lithotrity, this almost always arose from acute kidney disease and its consequences, cystitis being seldom met with, while in patients dying after lithotomy, urinary infiltration, cystitis, peritonitis, and pyæmia were the usual occurrences. Kidney disease, then, should be considered as an almost absolute contra-indication to lithotrity, as even the gentlest manipulation may then be followed by the worst consequences. In the Moscow Clinic, 405 patients were operated upon for stone during 1849–59. Of these, 293 were children (1 to 15 years of age), and 112 adults (15 to 65). Lithotrity was performed 30 times in the first category of cases, and 55 times in the last; so that of 10 children, 9 were operated upon by lithotomy and 1 by lithotrity; and of every 2 adults, 1 underwent lithotomy and the other lithotrity. Lithotrity was also performed upon 4 females with success. —*Brit. and For. Med.-Chir. Rev.*, Oct. 1864.

23. *On Phimosis, in relation to Hernia in Infancy.*—Dr. Friedberg some time since called the attention of the profession to the influence which narrowness of the prepuce exercises in the production of hernia in children, in consequence of the straining during the passage of urine which it gives rise to. This condition of things being relieved, the hernia soon becomes cured, even without the application of a truss. In the present paper he brings forward additional evidence, derived from the observation in his clinic of 111 cases of hernia occurring in children, at ages varying from eight days to one year. An analysis of these cases leads him to the following conclusions: 1. The number of boys exceeded that of the girls by 62 per cent. 2. Of the boys, 27.7 per cent. suffered from aggravated congenital phimosis. 3. The number of boys in whom more than one hernia existed was nearly double in those who were labouring under a high degree of phimosis. 4. After operating for the phimosis, the hernia disappeared in a remarkably short time, and quickly in proportion as the child was younger. It is not meant to be asserted that phimosis always impedes the flow of urine, and causes an amount of straining which, in those children in whom the passages remain more open than usual, may give rise to hernia. This is only the case in aggravated phimosis, which compresses the glands, and compels the child to make great and painful efforts. In moderate phimosis no such compression is produced, unless, indeed, as may happen, inflammatory action is induced by the retention of preputial secretion. When in a child with phimosis there is great straining of the abdominal muscles, incision of the prepuce is indicated; and after the incision has been made, the mucous membrane should be carefully raised from the glands by means of a director, so that all constriction may be

completely removed. Sometimes, when the prepuce has been supposed to have been incised, a fold of the skin only, and not the mucous membrane, has been cut through.—*Ibid.*, from *Prag. Vierteljahr.*, No. 1.

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24. *Lymphatic Tumours.*—At the meeting of the Surgical Society of Paris on June 22d, M. TRÉLAT related the case of a young man who had come under his care with a rare disorder—tumours formed of dilatations of the lymphatic vessels. The patient was robust and of good muscular development. He was a native of the island of Bourbon, which he had left for the first time in order to come to France. He had never had syphilis; there was no trace of scrofula, nor were there any enlarged glands in the neck or axillæ. When he was about fifteen years of age, a small enlargement appeared below the fold of the left groin; and soon afterwards, while performing gymnastic exercises, the patient was seized with severe pain on the right side, which was found to proceed from an inguinal hernia. This was reduced, and a truss was applied; but the region above the pad remained enlarged, especially after walking or exertion—there was, in fact a tumour in the right groin also, independently of the hernia. The patient at first paid no attention to the malady; and could not inform M. Trélat whether the tumours grew rapidly or slowly. He stated, however, that they had remained nearly stationary during the last four years.

When M. Trélat first saw the patient, he had an inguinal hernia on the right side. In addition, Scarpa's triangle on each side was occupied by a tumour elongated from below upwards. The tumour on the right side was 12 *centimètres* long by 7 *centimètres* broad; that on the left side was 13 *centimètres* by 8. The former descended somewhat lower than the other; but that on the left reached as far upwards as the internal orifice of the inguinal canal. The tumour on the right side was a little more projecting, more regular, and softer. That on the left side presented several lobules, of about the size of an almond, formed by the lymphatic glands. With these slight differences, the tumours were alike on the two sides. The skin presented no change of colour; it had not that bluish tint which is observed in varix and some subcutaneous erectile tumours. The surface was regular, perfectly normal, without that orange-rind appearance of the skin which is observed in varix of the superficial lymphatic network. No lesion or alteration of any kind could be detected in the two lower limbs. The skin was perfectly movable over the tumours, which could also be readily moved over the deeper parts. The swellings were soft, could be compressed in every direction, and felt like lipoma, from which, however, they differed in being reducible. Another diagnostic sign was furnished by the rarity with which symmetrical lipomata exist, without the presence of other similar tumours irregularly scattered elsewhere. During about four months, the patient had complained every three or four days of vertigo, accompanied by dyspepsia; the symptoms were removed by lying down and simple treatment. This reminded M. Trélat that a patient whose case was described in 1854 by MM. Desjardins and Gubler, and who had lymphatic fistulæ, was troubled by *malaise*, nausea, and vertigo, when she had lost a considerable quantity of lymph; and that a patient seen by Amussat had severe symptoms which ended fatally. M. Trélat's patient, however, had lately been very anxious about his disorder; and this alone might be sufficient to account for the dyspepsia and vertigo. Moreover, the vertigo had occurred only once during his voyage, and not since his arrival in France; since which his digestion had been very regular, and he had been able to bear exertion more easily than in Bourbon.

M. Trélat observes, that lymphatic varix appears especially frequent in warm countries. Thus, Amussat's patient was from the island of Bourbon; that of MM. Desjardins and Gubler from the Mauritius. Of four patients observed by M. Nélaton, two were originally from Brazil or the colonies; and Drs. Saint-Perne and Petit, who have practised in Bourbon, have informed M. Trélat that of several instances of lymphatic tumours in natives of that region, the patients were mostly young, the ages varying from 17 to 23; one only was 39 years of age.

M. Trélat did not entertain the idea of removing the tumours; and in this he was supported by the experience of M. Nélaton. Some years ago, M. Nélaton, at the urgent request of a young man, decided on excising one of these lymphatic tumours. The diagnosis being uncertain, an incision was made over the mass, when a considerable quantity of thickish milk-like fluid escaped, leaving only irregular flaps, and some beaded filaments which were removed. The patient, a young robust man, was soon seized with rigors and symptoms of purulent absorption, and died. The tumour on the opposite side, which had not been operated on, was injected with mercury by M. Sappey, and was shown to consist of a network of varicose lymphatic vessels.

Compression was applied in M. Trélat's case by one of Bourjeaurd's bandages; which was, however, obliged to be modified several times to meet the difficulty experienced in keeping up pressure. This was the only treatment that had been employed; and M. Trélat was desirous of learning from his colleagues in the Society, whether it would be justifiable to attempt to evacuate the contents of the swelling through an artificial fistulous opening. Some observations, principally bearing on the diagnosis of lipoma, were made by MM. Verneuil, Morel-Lavallée, Guyon, and Larrey; and the unanimous opinion was expressed, that operation was not advisable.—*Brit. Med. Journ.*, Sept. 3, from *Gazette des Hôpitaux*, 5 July, 1864.

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25. *Permanganate of Potash in Gonorrhœa.*—Dr. J. G. Rich, of Beachville, Canada West, states (*Canada Lancet*, July 15, 1864) that he has frequently employed, during the past two years, the permanganate of potash as an injection for gonorrhœa, and with the most satisfactory results, in some cases having effected a cure in forty-eight hours.

His usual mode of treatment is as follows: "R.—Potassæ bitart. ℈j; Podophyllin, gr. j.—M. In chart. No. IV. divid. S. One every two hours until free catharsis is produced.

"After which, R.—Potassæ permangan. gr. vj; Aquæ fontan. ℥j.—M. S. To be used as an injection three times a day.

"I direct at the same time the free employment of mucilaginous drinks, as althæa, ulmus, acacia, &c., and put the patient upon a non-stimulating regimen.

"Out of sixty-four registered cases this course of treatment has failed in but two instances. And I find that recent attacks usually become arrested by it after from three to six injections. I have found it advisable to continue the demulcents for at least a week after the cessation of the discharge. In none of all these cases was the injection continued after the fourth day.

"When accompanied by chordee, I usually employ the following: R.—Lupulin, ℈jss; Pulv. camphoræ, ℈j; Micæ panis, q. s.—M. Ft. mass. in pilulas xvi, dividenda. S. Two, three, or four on going to bed."

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26. *Treatment of Syphilis.*—Dr. F. C. Faye, Professor in the University of Norway, gives the following views as those which he has been led to adopt on this subject:—

In determining the comparative merits of a remedy or of a mode of treatment, in the disease in question, he observes, it is of importance, in the first place, to be agreed as to what is, properly speaking, to be understood by a radical cure of syphilis. The tests most relied on in deciding on the efficacy of treatment in effecting such a cure are, supposing all manifest signs of disease to have disappeared, the relative number of relapses which occur after apparent cure; and next, how far the posterity of the person treated enter the world healthy, and continue healthy during the first months or first years, as at a later period other and fresh causes may come into consideration. With respect to the number of relapses, syphilization may, according to the published statistics, claim to be more advantageous than the other modes of treatment with or without mercury. But in admitting this, it is necessary to remark that we are still ignorant how the comparison will stand after the lapse of time, for it will be remembered that some years ago syphilization held out hopes of a still more favourable result, it having been said that no relapses at all had been observed. But it appears from the reports that tertiary symptoms are now met with, and it is with special reference to the cases of relapse which may still be latent, that the second test above mentioned of the real or radical efficacy of a remedy becomes valuable.

The advocates of syphilization at first entertained the hope that syphilized women, having undergone a change similar to that effected in persons inoculated with variola or vaccine, would bring healthy children into the world. This hope was, however, doomed to disappointment. It was found, in fact, that women in whom all morbid phenomena had disappeared nevertheless gave birth to syphilitic children, and that a woman who had not had manifest signs of syphilis, and had not been subjected to treatment, but who gave birth to syphilitic children, after a course of syphilization, adopted with a view to remove the latent dyscrasia, still produced an infected child. In many of these cases it was proved that the father was entirely innocent. Hence it would appear that this mode of treatment, properly speaking, only makes syphilis latent for an indefinite period, and that it affords no security for the health of posterity.

As to the mercurial treatment, we know absolutely that many children in all countries are, after it, born healthy and continue healthy; while, on the other hand, a great many have perished. It has been found, too, that a child conceived after treatment has come healthy into the world, although the dyscrasia has at a later period manifested itself in a subsequent child. This result seems to show that the remedy has, at least for a time, succeeded in overcoming the poison in the ovaries or testicles, so that the ovum has been healthy during conception. Undoubtedly it is established by facts that even persons with evident signs of syphilis have produced healthy children, but such cases are rare exceptions; while, on the other hand, it is certain that in families treated with mercury whole series of healthy children have been met with.

The state of our knowledge as to the effects upon posterity of the non-mercurial medical treatment of syphilis is still very defective. Professor von Bärensprung had in preparation a report upon this subject, which would no doubt have been extremely valuable; but it appears that the Professor is now suffering from a disease which incapacitates him for work. In the Lying-in Institution in Christiania notes have been kept, since 1846, of all the dyscratic children born of mothers who have suffered from syphilis, and been treated in one or other mode. Since syphilization has been employed there, eleven unmarried syphilized women have sought admission, and all the children born of these women have either shown signs of syphilitic infection at birth, or have subsequently become syphilitic. All are dead. Of the syphilitic women treated by derivation in Dr. Hjorth's division, four, likewise unmarried, have been delivered in the institution; and of these, one gave birth to a dead child, while the other three brought forth children without signs of any dyscrasia, and it was found that the weight and nutrition of these children even exceeded the usual proportion. Of these children, one continued healthy and thriving at the age of two years, while the other two were equally healthy at the ages of seven and nine months respectively.

A third test of how far the syphilitic dyscrasia has been removed from the system has been suggested, namely, accurately to determine the state of the internal organs in individuals who have died of other diseases, but have suffered from syphilis, or in whom the evident symptoms had disappeared after treatment. Many cases are on record in which, in persons treated for syphilis with mercury, the internal organs have all been found in a healthy state. We have not as yet before us sufficient data to enable us to arrive at any positive conclusions as to the condition of the internal organs after treatment by syphilization and derivation. Some scattered observations brought by Mr. E. Winge before the meeting of naturalists in Stockholm, in 1863, would tend to show that syphilization had not been able to extinguish the dyscrasia, and the same is true of derivation.

The author next proceeds to review practically the several modes of treating syphilis which have from time to time prevailed, and prefaces his observations by reminding his readers that "whether we be unicists or dualists as to the origin of the chancrous poison, it must certainly be looked upon as decided that there is a species of chancre which behaves quite as a local sore, and by which the system therefore is not affected, and that such chancres, which can usually be recognized, ought to be treated as purely local affections." But as to infecting chancres a question arises whether it is more advisable to treat them actively from the beginning, with a view to prevent, or at least to mitigate, the constitutional symptoms, or to await the general effects of the infection before proceeding to any specific treatment. The author appears inclined to believe that the practitioner may in many cases venture to treat syphilis by the so-called blood-purifying methods, without adopting any specific treatment whatever. Among the remedies belonging to this class are diaphoretics, decoctions, diet cures, water cures, derivatives, aperients, very small bleedings combined with full diet, mineral waters, iodide of potassium, iodide of ammonium, etc.

Professor Faye next passes to the consideration of the alleged recent increase of syphilis, which has by some been attributed to the neglect of early treatment, and to the want of the observance of due precautions, especially in the practice of syphilization. It is, moreover, unfortunately, now no longer doubtful that syphilis may be propagated in vaccination, and that this has actually occurred more frequently than has been supposed.

Everything considered, it is quite natural that very many physicians should still be advocates for the use of mercury, notwithstanding the imperfections of that as well as of so many other therapeutic methods, for experience has shown that this remedy is capable of, to a certain degree, neutralizing more rapidly than other means the effects of the syphilitic poison, so that at least the danger of a propagation of infection is considerably diminished, inasmuch as the morbid phenomena which subsequently arise in many patients, although disastrous to the parties immediately concerned, are far from being attended with the same danger to others; and this is especially true of many of the so-called tertiary symptoms. In the next place, because this remedy seems, when properly used in small doses, to be more efficacious than others in preventing the certain transmission of the poison to posterity, to which object, among others, Dr. Whitehead, of Manchester, has particularly directed attention, and has endeavoured by facts to establish his position. In Norway, where Radesyge (which, as is well known, is considered to be of syphilitic origin) has for many years prevailed, and has been successfully combated in great part with mercury, as well as in Jylland, where a peculiar syphiloid has existed, facts might readily be collected in illustration of this point. Lastly, mercury is recommended on account of its efficacy in many obscure and masked forms of a remote syphilitic origin, in which other means have failed. Many striking instances of this nature might be brought forward, quite sufficient to justify the opinion which has been expressed, that "if mercury be not a specific against syphilis, there is no such specific."

In infancy mercury appears to act well. The metamorphosis of tissue is active in the child, and the remedy will, when it neutralizes the poison, be again with greater ease eliminated from the system, especially if this change be promoted by a suitable diet. Experience, too, has shown that persons who have in infancy been cured with mercury have, in after life, proved to be so free from the dyscrasia that they have become parents of healthy children. The importance of pushing the study of all remedies which may tend to counteract so great an evil as latent syphilis will appear from considering the influence the latter has in spreading the disease, and also upon the health of posterity. If we suppose that latently syphilitic individuals—and such all may reasonably be considered who, although apparently cured, beget syphilitic children—in connection get a soft chancre or even a slighter local affection, experience seems to indicate that such originally local sores may, from the juices of the system, become mixed with infecting matter, and may transmit actual syphilis to other individuals, just as it has been shown that vaccine vesicles may, in the latently syphilitic, become infecting syphilitic ulcers.

In the tertiary and quaternary forms of syphilis, Professor Faye advocates the external employment of mercury in very small quantities, for example, by means of the calomel fumigations so much recommended by Messrs. Parker and H. Lee, as well as in the form of salve—best prepared with glycerine-plasma—an advantage of this method being that other strengthening, nourishing, and alterative agents may at the same time be employed. "In the Children's Hospital I have," he says, "in some persons with localized tubercular nodes with deep unhealthy sores and affections of the bones, who have in vain or without any permanent effect been treated with other means, tried these calomel fumigations, any action upon the lungs being prevented by a close covering. In this manner the fumigations may be continued for an almost unlimited time, and the effect is, of course, milder and more gradual than if, as has been recommended in England, the vapours be at the same time inhaled. The glycerine salve I have employed in small portions externally upon the skin, or, following the English, as small suppositories in the rectum."—*Med. Times and Gaz.*, Oct. 29, 1864.

27. *Syphilitic Disease of the Epididymis.*—M. Dron, of the Antiquaille Hospital at Lyons, describes syphilitic disease of the epididymis as not being rare, although it is scarcely described by writers. M. Dron has noticed sixteen cases in the course of six months; in fourteen the disease was confined to the epididymis, and in two there was also syphilitic orchitis. In none of the cases could the affection of the epididymis be referred to any other cause than syphilis, and the efficacy of the treatment employed confirmed the diagnosis.

Syphilitic tumour of the epididymis generally occupies the head of the organ; sometimes, but less commonly, the engorgement extends to the whole organ, but even then the head is the part most affected, and continues enlarged for a longer time. In one case only was the tumour situated on the tail. Both sides are commonly affected at once; but usually one epididymis more than the other. The tumour is generally not larger than an olive or hazel-nut, sometimes even as small as a pea. In consistence it is always solid and resistant, but in various degrees; in old and indolent cases, it acquires a cartilaginous hardness. The surface is unequal and nodulated. When the tumour has acquired a certain size, it lies against the testis without it, such as occurs in epididymitis. The testis can always be easily distinguished. Most commonly the epididymis and its tumour remain detached from the testis. The syphilitic engorgement of the epididymis may be completely painless, even on pressure; the patient frequently does not perceive the tumour until his attention is drawn to it. In some cases, however, pain is produced by compressing the tumour; and, in others, the tumour is spontaneously painful, especially at the commencement, and it is in such instances that it attains the largest size. Even in these cases, however, the patients have not been obliged to interrupt their occupations. The functions of the organ do not seem to be interfered with by the disease. As far as can be observed, syphilitic disease of the epididymis appears about three and a half months after chancre. It probably appears later in some cases; but even when it appears early, there are also severe and tedious secondary affections, such as papular or squamous skin affections. If left to itself, the tumour has an indeterminate duration; but, if properly treated, has always been removed in M. Dron's cases. Two months are generally necessary; but a cure may be effected earlier. In one case, the organ suppurated.

Syphilitic tumour of the epididymis cannot be confounded with acute blennorrhagic epididymitis; but there may be difficulty in diagnosis when chronic epididymitis occurs in a syphilitic patient. But, in the latter case, there will be a history of gonorrhœal discharge; and this may even be present. The patient also will have had symptoms denoting acute inflammation; while the development of the syphilitic epididymis is not attended by any such manifestations. If left to itself, the gonorrhœal engorgement tends to disappear; the syphilitic remains. The former, after invading the entire organ, becomes limited to the tail, where it remains for a considerable time; the syphilitic disease almost always commences in the head. Finally, blennorrhagic epididymitis is commonly single; while the syphilitic disease generally occupies the epididymis of each side.

Tuberculous diseases of the testis, concurrent with syphilis, may at the commencement be confounded with syphilitic epididymitis; the disease appears in the head of the organ, is indolent at the commencement, and the tumour is hard and nodulated. In the tuberculous disease, however, the nodules grow and project, and at the same time become soft and painful. The skin becomes adherent to them, ulcerates, and allows the escape of a soft cheesy mass, mingled with pus. The vas deferens often becomes moniliform in consequence of the deposition of tuberculous matter in its interior; and this deposit also takes place in the vesiculæ seminales, prostate, etc.

M. Dron regards the presence of syphilitic epididymitis as being always indicative of a severe syphilitic affection of the system, especially when the local disease returns frequently and is very intense. In all the cases, however, which have come under his notice, the disease has been subdued by treatment.

The lesion of the epididymis rarely exists alone; and hence the treatment is generally guided by the concomitant symptoms. Thus, according as secondary or tertiary symptoms have been present, mercury, iodide of potassium, or a mixed treatment, has been used. The duration of the treatment requisite for the disappearance of the tumour has varied from a fortnight to nine months.—*Brit. Med. Journ.*, Sept. 3, 1864, from *Archiv. Génér. de Méd.*

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28. *Tracheotomy in Diphtheria.*—Dr. George Buchanan, of Glasgow, in a paper read before the British Medical Association, at its meeting in August last, advocated the performance of tracheotomy, under certain circumstances, in diphtheria. He stated that he had performed the operation twenty-one times. "Seven of the patients recovered, and fourteen died. But it is improper to judge of its value from such limited statistics. In the hands of surgeons who have had larger experience, the mortality seems to be about three out of four operations. Even among the French, who resort to it much earlier, the average success is one in four. So, then, in view of numerical statistics, the results are not very encouraging. But I have all along held that this, of all surgical operations, is not to be tested by statistics. It is to be borne in mind, that the disease for which it is practised is a most dangerous one, and, at the stage of obstructed respiration, is almost certainly fatal. The question, then, is: When it has advanced beyond the control of medicine, can the surgeon hold out a hope of life? Has the operation saved the lives of any whose case has become hopeless? That it has done so is beyond doubt; and that it would be still more valuable I have no hesitation in believing, if it were firmly pressed on the parents at a suitable stage.

"The operation for strangulated inguinal hernia is a very successful one, if resorted to immediately after a fair trial of the taxis has failed in reducing the tumour; but, if delayed for twelve or twenty-four hours, it becomes a vast deal more dangerous. Do we, therefore, hesitate to give the patient the benefit of our surgical operation, because he will not yield to our representation at the first? And would we be justified in collecting our statistics from those cases in which strangulation has existed longer than we desire?

"In diphtheria, the average success of tracheotomy is not the question; but, Can we save lives which would otherwise be lost? When I first performed this operation in diphtheria, I was afraid that the general disease would be a contra-indication to its performance; but experience has shown that it may be performed with safety and success, whether the primary disease has been croup or the other. I would not perform it in a case where the vital powers were completely prostrated by the pre-existing malady; in other words, where the patient was dying of asthenia. Approaching suffocation, with fair strength, is the proper indication.

"Even in the cases which ultimately proved fatal, the relief to the urgent dyspnœa was sufficient to warrant the operation; and to show that, if performed at the proper time, there is a fair chance of success. It is a very remarkable thing, which I have observed in almost every instance, that as soon as the operation is safely concluded, and the tube lodged in the trachea, the child falls asleep, apparently worn out by the previous restlessness and want of sleep, which has been the most distressing symptom for the twenty-four or forty-eight hours preceding; the tranquillity of the respiration affording a rest to the exhausted powers of the sufferer. When the operation fails to afford permanent relief, death rarely occurs from suffocation, but usually the child dies from exhaustion—a much less painful and harassing mode of death than the fearful struggles which precede death from suffocation. In this lower view, I think the operation is warranted.

"But the important question is, Could we not save more lives by performing the operation earlier in the disease? It seems undoubted that, when symptoms of laryngeal complication occur, the hope of recovery is but small. No doubt, isolated cases do occur; but I appeal to the experience of those who have seen a great deal of this disease, whether recovery is not a rare thing after we are satisfied that the exudation has spread into the air-passages. The great object of treatment is to subdue the disease before this has occurred; and in a great majority of cases, under proper management, the symptoms will yield and disappear; but in others it will advance, notwithstanding the most sedulous attention, and prove fatal in a very large number, as the returns of the Registrar-General will show. In an advanced stage, it is not very difficult to assert that the case will certainly prove fatal; and even then, if the tendency to death is by apnœa, more than asthenia, the operation ought to be had recourse to without delay.

"But I believe that, in an earlier stage than this, the operation would be much more successful. When the medical treatment has been fairly tried, and failed to arrest the disease; when the respiration begins to be laboured and crowing—the result of exudation into the larynx—then, I think, is the time to operate. In almost all cases, the symptoms become aggravated; and the strength is worn out by the struggle before the relief is given, if not taken at that point. I am convinced that further experience will enable medical men to ascertain a stage at which the operation will be justifiable, with a fair prospect of success.

"The operation is one that every practitioner ought to hold himself prepared to undertake on an emergency; still it is one difficult of execution, and to be gone about with great caution. In children, the trachea lies very deep; and the encroachment of the thymus gland from below, and the isthmus of the thyroid from above, leave a very small space in which the incision can with safety be made. The continual movements of the trachea, caused by the obstructed respiration, render it difficult to be reached with safety. The steps of the operation should be proceeded with, quietly, calmly, slowly, and with great regularity. The operator should dissect carefully down to the trachea. Layer after layer of tissue must be carefully divided, and held aside till the rings of the trachea can be seen clearly at the bottom of the wound. Any bleeding must be arrested before the opening is made. When the tracheal rings are fairly exposed, a sharp hook is to be placed at the upper part, and a bistoury plunged firmly into the tube, and made to cut a slit nearly a quarter of an inch long. After the spasm attending the opening has subsided, the tube can usually be easily introduced.

"In the after management of the case, the points I have found most essential are, to keep the tube clear; to diffuse some steam through the apartment; and to give milk or beef-tea, and perhaps a little wine or some kind of fluid nourishment. The trachea soon becomes tolerant of the tube, which can be retained five or even seven days, if need be."—*British Med. Journ.*, Sept. 17, 1864.

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29. *New Mode of Amputating the Thigh at the Knee.*—At the recent annual meeting of the Association of German Naturalists and Physicians at Giessen, the section on surgery had a lively discussion on the merits of a new mode for amputating the thigh at the knee, excogitated by Gritti; in it the thigh-bone is sawn off through the condyles, or at the epiphysal line, and the anterior flap is allowed to retain the patella, which it is intended to heal upon the sawn surface of the femur. Dr. Lücke had done this operation in four cases. The first was that of a soldier, who had received a shot into the knee at Missunde; he died in the second week, of purulent discharges; the patella was not united to the femur. The second case dated from the storming of Düppel. Here the patella became firmly united with the saw-cut on the femur, and the patient had an excellent stump; the cicatrix was behind, and had not to sustain any pressure during walking on the stilt-foot. The third and fourth cases both ended fatally. Dr. Lücke communicated another case, from Rotterdam, in which the patella had been perfectly united with the section of the femur. Professor Wagner, of Königsberg, next detailed the result of the dissection of a case of Gritti's operation, which had recovered, but died subsequently of kidney disease. The patella was riding upon the anterior edge of the cut surface of the femur, was thickened and bent, and united to the femur by connective tissue only. Professor Bardeleben, of Greifswalde, preferred amputation in the lower third of the femur to

Gritti's operation. Dr. Heine had collated twelve cases of Gritti's operation, made during the last campaign. Two only were successful; one was the case of Lücke already mentioned; the other, a case in the Austrian hospital at Altona, which had been operated upon immediately after the sea-fight near Heligoland. All the others died of pyæmia.—*British Medical Journal*, Oct. 29, 1864.

30. *Strangulation of the Spermatic Cord as a Substitute for Castration.*—A man, aged 70, was admitted into the Orvieto Hospital, having had for twenty years an encephaloid tumour of the right testis. The tumour was large, uniformly soft and elastic; but non-fluctuating and opaque. The patient had lancinating pains extending along the cord into the abdominal cavity. Instead of excising the tumour M. Reali performed the following operation. Standing to the right of the patient, he seized the spermatic cord with the thumb and fingers of his left hand, and raised the part so as to make the skin tense. An incision an inch and a half long was then made, and the cord was laid bare. The operator then opened the sheath, and, by means of a needle introduced a strong thread by means of which he rapidly and completely strangled the end. The thread was tied tightly, and the ends were left between the edges of the incision. The result of the operation was very satisfactory. The ligature was detached on the fifteenth day. Two months after the operation, the wound was entirely cicatrized, and the volume of the tumour had diminished nearly one-half. The tumour continued to decrease; and, ten months after the operation, the testis had returned to its normal size. The cure was permanent. A second operation of the same kind performed on a man 40 years of age, was less fortunate; the patient died of the sequelæ of the operation. In a third patient, a young man aged 23, who had an almost stony enlargement of the testis with a slight serous collection, the result was as satisfactory as in the first case. The testis, which had been four times as large as the other, was reduced almost to its normal size. —*Brit. Med. Journ.*, Sept. 3, from *Annali Universali de Medicina.*

31. *Ovarian Extirpations.*—Dr. Chas. Clay publishes (*Glasgow Medical Journal*, Oct. 1864), a report of his 109th and 110th cases of ovarian extirpation and gives the following tabular results of all his abdominal operations for the last twenty-two years, *i. e.*, from 1842 to 1864.

Cases from 1842 to 1864.	Number.	Recoveries.	Deaths.
Ovarian Extirpations	110	76	34
Cæsarian section	1	0	1
Entire removal of uterus and appendages (being fibroids), through the parietes abdominales	3	1	2
Cutting down upon ovarian tumours (in cases of almost universal adhesions), to reduce their bulk from within, and setting up ulceration where removal was impossible	4	4	0
Cysts tapped and injected with tincture of iodine .	6	4	Two filled again.
Total results	124	85	37

It will be here seen, that in my practice of twenty-two years, the recoveries in operations of ovariotomy alone are about seventy per cent.—a result that I cannot but consider flattering. The reader will also observe, that during the above period I have extirpated three fibroid uteri with their appendages entire, through the abdominal parietes, as in ovariotomy. These I believe to be the first operations known of the kind. The first and second operations were in 1844, and the last in January, 1863, and reported in the *London Obstetrical Society's Transactions*, vol. v. I mention these particularly, because Professor Koeberl operated similarly on a fibroid uterus on April 20, 1863, and stated his to be the first operation of the kind in the world; whereas my first and second operations were nineteen years, and my last some months, prior to his operation. The fibroid in my last case weighed eleven pounds.

32. *Treatment of Stricture of the Urethra by Subcutaneous Division.*—In the year 1853 Dr. HENRY DICK published his first case in the *Medical Times and Gazette*, and in 1855 he sent a memoir to the Académie de Médecine de France, in which two other successful cases are related. Since that time, Mr. William Adams and Dr. Dick's colleague at the National Orthopædic Hospital, Mr. Allingham, have operated after the same method with the best result. Dr. Dick divides strictures into two classes, after their physical properties—namely, into dilatable and non-dilatable. Stricture may occur at any spot of the urethra, but the most frequent is the bulb. They are less frequent at the fossa navicularis and the membranous portion. Stricture is the result of inflammation, a new tissue being formed at the strictured spot, which is of a fibrous nature. The greatest number of strictures take the form of atrophy; but a few are met with of the hypertrophic form. In drawing attention to the shape of the stricture, Dr. Dick points out that every portion of the stricture must be divided, because if only the narrowest part is divided, symptoms of stricture will return. He further alludes to deviation of the urethra in strictures, believing that the back opening of the stricture does not correspond with the front opening. He says that those pathological changes are the result of post-inflammatory retraction. Dr. Dick passes in review the different treatment of stricture. He believes dilatation by the graduated metallic bougies is the safest; but there are cases where dilatation will not give much relief to the patient, or sometimes social exigencies urge the patient to get radically cured. The different methods employed he divides into three: 1st, cauterization; 2d, splitting or tearing; 3d, cutting strictures. And the cutting he subdivides into three kinds: the internal, the external, and the subcutaneous methods. He thinks cauterization the most objectionable, having regard to the pathological anatomy of strictures. Splitting he only admits in a few exceptional cases—where division by the knife cannot be practised with safety, where a number of strictures are closely following each other, or where a large part of the urethra is strictured; but even in these there is no certainty if the stricture has been really torn or only forcibly dilated. He cites two cases of sudden death occurring after splitting. His other objection to splitting is that the pain is so violent that recourse must be had to chloroform. Besides, it is a principle in surgery never to tear parts when they can be cut with safety. Dr. Dick thinks the internal incision is the most logical, having regard to the pathological anatomy of strictures; but its execution has great drawbacks: he alludes to the difficulty of making the cut at the right spot with the instruments. Incisions with those cutting machines are very difficult to execute, as very often the knife acts as dilator instead of a cutting instrument when the part is not tensely dilated. He objects to the external incision as being almost as hazardous an operation as cutting for stone. The suppuration afterwards is also long, consequently pyæmia is much to be apprehended; besides, the long suppuration is very likely to occasion great retraction, some cases of which have come under his own observation. He comes now to the subcutaneous division, which he believes fulfils the indications of the pathological anatomy. The surgeon can attack directly with the knife the contracted spots. He is at liberty to make his subcutaneous cut as long and as deep as he thinks most suitable for the occasion. The external puncture heals in the first twenty-four hours. The operation has further the advantage that chloroform is not required, the pain being very trifling; the hemorrhage, too, is insignificant. The subcutaneous method is indicated not only in severe strictures where dilatation cannot be practised, but also, in his opinion, in those elastic strictures which return after dilatation. He then describes the mode of operating. Dilatation must first be practised to a small extent, to enable the operator to pass a small-grooved conductor through the stricture. No chloroform is used. The patient's regimen is not changed. In winter he confines his patient to the room for eight days; in summer only for three days. For the operation the patient is placed in the position for lithotomy. The instruments used are a grooved conductor, which was shown to the society; an ordinary tendon knife, which for strictures in the membranous portion should have rather a long neck, and be a tenotome caché; a good-sized catheter in proportion to the orifice of the urethra; a T-shaped bandage, an ordinary bandage, sticking-

plaster, and lint. No bandages are required for strictures in the membranous portion; for the latter cases a large metallic bougie is left in the urethra after the operation. The patient placed in position, the conducting catheter is introduced until the two knobs stop before the stricture; then the surgeon, by skilful manipulation, slides out the small grooved conductor (which was concealed in the conducting catheter) through the stricture. The conducting instrument being then in position, the surgeon delivers it into the hand of his assistant, telling him to keep it gently but steadily against the stricture. He then feels outside the urethra for the two small knobs, grasps with his left hand the penis with the instrument, and places his thumb just before the knobs, having his index and middle fingers at the back of the penis; he then takes the tenotome in his right hand, and thrusts it between the two knobs, pushing it resolutely through the stricture, and divides it in that sawing manner in which usually tendons and fibrous tissues are divided. He thinks the cut should always be from three-quarters of an inch to an inch long; also that the knife should not be withdrawn until the surgeon is quite convinced that the stricture is completely divided. The conducting catheter is then withdrawn, and lint and sticking-plaster placed on the external wound, and the whole kept in position by a T-shaped bandage, a common roller, and a few pins. The patient is then put to bed, and his urine drawn off twice or thrice a day, when required, with a large catheter. Dr. Dick strongly objects to leaving a catheter in the urethra after the operation. He now quotes four cases of his own and two of Mr. Allingham's, all of which were attended with the most successful results. In them he relates as a remarkable fact that shivering always took place, but no bad results followed. The only case in which shivering did not occur was that after incision in the fossa navicularis. Another point of importance on which he dwells is, that dilatation with a large metallic bougie should be practised once a week for six months after the operation.—*Med. Times and Gaz.*, July 2, 1864.

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33. *The Wire Compress as a Substitute for the Ligature.*—Mr. Dix extols (*Edinburgh Medical Journal*, September, 1864) the wire ligature as a substitute for the ligature to arteries. His directions for the application of the wire compress are as follows: "Take a piece of surgical wire, six or eight inches long, and thread each of its ends upon a straight needle.

"Seize the bleeding mouth of the artery with forceps, and pass one of the aforesaid needles close on each side of the artery, about a line above the points of the forceps, directly down through the substance of the flap, so that they emerge at the cuticular surface, about half an inch distant from each other. Draw them both through together, till the curve of the wire compresses the vessel on the face of the flap. Now, get rid of the needles by clipping through the wire close above their eyes, also detach the artery forceps. Place a piece of cork cut for the occasion upon the skin between the points of exit of the wire, and over this twist the wire tighter and tighter till the bleeding is arrested. Lastly, cut off the superfluous wire. All which is done much quicker than described. Repeat this process upon as many vessels as require it.

"Two arteries lying near together may be embraced by one wire; and, as I have said, the veins may be included or excluded at will.

"The wire should be either silver, or, what is much cheaper and equally manageable, the finest and softest passive iron. The generality of the iron wire used for sutures is too hard and stiff. That which I have employed was supplied by Mr. W. B. Hilliard, surgical instrument maker, Glasgow, who also furnished the needles, which are about three inches in length, straight, and three-edged, with an eye adapted for carrying wire.

"Special care is necessary in threading the wire, that it be kept perfectly free from all kinking or twisting. The forceps are used, not to draw out the artery, as when a ligature has to be applied—this, indeed, is to be *particularly avoided*—but merely as a guide to mark the exact position and course of the vessel. The cork is necessary to protect the skin from the pressure of the wire. The stump will now be dressed according to the fashion of the operation.

"Of course, objections will be raised to this scheme. The only one to which I need reply by anticipation, is that which naturally occurs to any one looking at the thing for the first time. How is that wire to be *withdrawn?* This, at first sight, appears an insuperable difficulty. Let any one who entertains that idea try the experiment on the dead subject, and he will probably be surprised, as I was, to find how easily and certainly it is effected. To which he may add, my *experimentum crucis*, that it is equally easy and certain in the living body. Here, I ought to mention, that it was from Mr. Hilliard I first learned that the abrupt bending of the wire is not an impediment to its removal. He also suggested to me the use of two needles in the way just described, by which the wire is applied much more expeditiously and exactly than by using a single needle. The only conceivable obstacle to its withdrawal would be a kink or hitch in the wire, which might cause much inconvenience. Hence the stress I have laid on the necessity of carefully avoiding this mischance in threading and fixing the wire. Its removal, no doubt, requires to be cautiously conducted. Thus, clip the wire close to the edge of the piece of cork, and straighten out the curve it has necessarily formed at its exit from the skin. Remove the cork, and apply instead the tip of one finger, with which press firmly upon the flap, making traction, gently and gradually, upon the other end of the wire. In this way it comes out with great facility: but if this were roughly and harshly done, it might break up the adhesion which we suppose has taken place between the surfaces of the flaps, and it is quite possible that a kink in the wire might lacerate the artery in passing over it.

"But it is certain that none of these evils need happen with ordinary care and tact.

"As to the period of withdrawal, further observations are desirable; but it has been shown, in numerous cases of acupressure, that for small vessels a few hours of compression is sufficient; and for the largest arteries a much less time than might, *a priori*, have been supposed. However, as a general rule, it is not desirable to disturb a wound in any way for from twenty-four to forty-eight hours, at the end of which time all wires commanding the secondary branches may be safely removed, and probably also from the large arteries; but, as a matter of prudence, one would at present prefer to keep a check upon such an one as the femoral for three or four days at least. Better it should remain needlessly long than be prematurely removed, for, as has been said repeatedly before, the presence of the wire is almost innocuous."

Mr. D. gives the following tabular *résumé* of the points of contrast between the ligature and the wire compress.

The main distinctions are these:—

The ligature consists of *organic* material. It absorbs fluids of the wound—is itself liable to decomposition, and is very obnoxious to the living structures.	The wire being a *metallic* substance is non-absorbent—non-irritant, and almost innocuous to the tissues.
The ligature is fixed to, and fastened upon, the artery itself. It lacerates its structure, and puckers up and corrugates the tube.	The wire is not attached to the vessel, nor indeed to anything else; it does not tear the coats of the artery, but closes it in a smooth and even manner, by gently pressing together its internal surfaces.

Which of these, it may be asked, is the more favourable condition for healthy adhesive repair, *quoad* the artery?

The ligature excites, promotes, and prolongs suppuration.	The wire has no tendency of this kind, hence will there be less danger of pyæmia, and a greater chance of adhesion of the wound.
The ligature necessarily causes ulceration of the artery, and death of the part on which it is tied.	The wire has no such effect; hence, secondary hemorrhage will be less likely to occur.
The ligature remains for an indefinite time, and on the other hand, from a brittle or sloughing artery, it may be cast off too soon.	The wire is removable at will, and at the same time it cannot be spontaneously dislodged. Another safeguard against bleeding.
The ligatures project between the edges of the integument, presenting a mechanical impediment to their union.	The wire does not interfere with the edges of the wound, nor with the adjustment of flaps; hence, union by adhesion will be more probable.

In the application of the ligature, the vital connections of the artery are damaged, and its *vasa vasorum* broken up.	The wire is applied without any disturbance of the artery itself, which, therefore, is probably earlier and more securely closed.
The removal of the ligature is uncertain; ineffectual attempts are common, very painful, and injurious to reparative action; and the knot especially, in its withdrawal, tears through granulations and breaks up adhesion.	The wire is withdrawn at once, and certainly without any futile, painful, premature tractions, or disturbance of parts, or any interruption to the healing process.

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34. *M. Chassaignac's Drainage Tubes.*—The greatest and simplest and most generally useful of M. Chassaignac's special modes of treatment is the *draining tube*, and we doubt whether the professional mind on this side of the Channel is yet sufficiently alive to its merits. Most of our readers have heard of it—a little India-rubber tube perforated with holes, and introduced into suppurating cavities, in order to provide for the gradual, constant, and immediate discharge of all secretion without admission of air. Any one who follows M. Chassaignac for a few mornings, and hears him order *un peu de drainage* will see the class of cases to which the method is applicable; and if he shares our good fortune, he will see some of the results, and hear a clear exposition of the very simple principles on which it is based. As the visitor follows from bed to bed amongst the chronic surgical cases attended with suppuration, he will see here a thigh, there the back or the breast, or possibly a tarsus swelled into that too familiar lump indicative of scrofulous caries, and in each case one, two, or perhaps half a dozen of the tiny black tubes passing right through the diseased part; in fact (in the case of a diseased tarsus, for example), wherever there is, or threatens to be, a sinuous opening, there M. Chassaignac orders *un peu de drainage.* As he passes round in his visit, the tubes are examined to see if they flow freely, and the edges of the aperture are just touched with a solution of lunar caustic, to supply which, the clinical clerk follows with a bottle of the solution, and a handful of wooden skewers armed with a little piece of cotton wool, which are rapidly used and thrown aside. This protects the orifices from ulcerative action, and from possible contamination from without. The principle of the drainage system is clear enough. A bone is carious; particles of the tissue in a state of decay are cast off, and mingled with the exudations of the surrounding parts, they form a petty swelling. This cannot be absorbed in most cases; and it acts as a source of irritation to the neighbouring tissues, and tends to spread the morbid action of which it is the result. In ordinary practice, when it has accumulated in quantity to form an *abscess*, it is discharged by incision, if need be. But fresh collections form, and discharge themselves in other tracks, till the whole member is riddled with unhealthy sinuses. Here drainage does well what the best efforts of nature point to, but accomplish ill. It provides at once an exit for discharged and necrosed particles, through a track which the surgeon chooses, and which does not add to the severity of the original disease, for the hole made by the fine trocar, which introduces the tube, is a very slight injury. But this slight wound accomplishes all that can be done by a *free incision.* Again, instead of waiting till extensive disease has resulted in large abscesses or in a heroic operation of excision, or of gouging, these little tubes do the work of the gouge piecemeal and incessantly. We do not say that English surgeons are unacquainted with the tubes, but they do not know enough of their *preventive* functions. Surgical books contain cuts of gouges, and of *osteotrites* for cutting or grinding away carious bone, when the case has become a matter of life or limb; but they do not tell us to bore a tarsus with the little tube, which shall stop the mischief at its outset. As to the results, we saw at the clinical lecture patients presented cured, who had suffered from lumbar abscess following vertebral caries, and from various other scrofulous diseases of bone. The exposition of the method and of the result was admirably given, showing immense shrewdness and ingenuity, together with that thoroughly practical seeking for *results*, which we are apt, in these islands, to think peculiarly our own.—*Medical Times and Gazette*, 1864.

OPHTHALMOLOGY.

35. *Cardio-Thyroidean Exophthalmia.*—M. VON GRAEFE has lately called attention to a symptom hitherto unnoticed in the above-named affection. This symptom presents itself from the first, and is characteristic and pathognomonic. It is the suspension of the sympathetic connection normally existing between the vertical rotation of the visual plain, and the movement of elevation and depression of the superior eyelid. In the normal state, the eyelid is seen to follow this movement, and to be elevated or depressed in proportion to the extent of the rotation of the eye. But in the case of this disease, the eyelid remains motionless, especially in the rotation of the eye downwards. This symptom is not observed in ordinary exophthalmia, as when the eye is protruded by an intra-orbital tumour. But it is constantly present in cardio-thyroidean exophthalmia. It is evident that this immobility of the muscle of the eyelid depends upon some interference with its nervous influence. Probably, this function of the muscle depends upon the filaments of the sympathetic supplied to some of its fibres, as pointed out by Müller; the portion of the muscles to which those filaments are supplied being employed in co-ordinating the movements of the eye with those of the eyelid. This symptom is important, because it presents itself at a very early period of the disease. Hence, the initial semeiology of cardio-thyroidean exophthalmia affords us two symptoms: oculo-palpebral ataxia and acceleration of the heart's action, independent of any organic disease. The condition of the thyroid gland, of the heart, of these muscular fibres of the eyelid supplied by the sympathetic—all tend to show that the sympathetic nerve is the chain by which they are linked together. This theory is strengthened by a recent discovery of von Bezold, that the heart's movements are accelerated through this ganglionic nervous chain. M. Remak has practically made use of this fact by subjecting the cervical portion of the sympathetic to galvanism in a case of spasmodic action of the heart. M. Remak, also, relates the case of a patient affected with facial paralysis of ganglionic origin; the paralysis being characterized by total muscular anæsthesia, as well as by muscular atrophy. The paralysis was attended by swelling of the superior cervical ganglion of the sympathetic, as well as by swelling and induration of the corresponding submaxillary gland. The patient was completely cured by the application of the uninterrupted electrical current.

These facts tend to show that exophthalmia is a nervous affection seated in the cervical portion of the sympathetic. The therapeutical remedy which is recommended as worthy of trial in such case is founded on physiological considerations. It is the application of the electrical current to the cervical sympathetic; the early and true condition of the disease being determined by the symptom pointed out by Graefe, and here detailed.—*British Medical Journal*, September 17, 1864.

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36. *Case of Extreme Squint cured, without Operation, by the Use of Prisms; with Clinical Remarks.*—The following case, related by Mr. ERNEST HART (*Lancet*, 1864), is interesting, as showing that certain cases of strabismus may be radically cured by the adaptation of optical means, without any operation. Mr. Hart observed in reference to it, that a careful study of the origin and nature of various forms of squint shows that the treatment must, to do justice to the patient, be almost as much optical as purely surgical; and there is a large proportion of cases in which merely optical means succeed perfectly, either in averting the formation of a permanent squint, in curing it when the proper glass is applied early, or in preventing relapse after operation.

J. C., aged twenty-seven, a sailor, of good general health, and had always possessed excellent sight. In May, 1863, he had a severe attack of rheumatic fever; various joints were attacked in succession, and he lay for nearly two months helpless in bed. Towards the end of the attack the eyes became affected: the light became painful to them; the eyeballs he describes as having become blood red, and acutely painful, the pain being severe over the brow, and darting through the head from the frontal region. The face was blistered by the abundant and acrid lachrymation. Thus there seems to have been an acute rheumatic ophthalmitis. He recovered well, and is not aware that there were any immediate traces left of the disease. He went a voyage to the Cape, and came home in satisfactory health; but in the subsequent voyage, in December, 1863, he became aware of a certain dimness and confusion in looking at objects, a difficulty in measuring distances, and in defining the outlines of things and persons before him. This came on, he thinks, quite suddenly; and in the course of the day he found that he had a decided convergent squint of the right eye, and that he had lost control over the movements of that eye. He consulted Mr. Hart in the middle of January last.

Mr. Hart found then a convergent squint, monolateral, of the right eye, permanent, and due to paralysis of the external rectus. The visual powers of the two eyes, tested separately, were very nearly equal. There was no dilatation or semi-dilatation of the right pupil; no drooping of the lid. The latitude of accommodation was equal to that of the left eye. The patient suffered greatly by the constant confusion arising from the double set of images which the incongruous eyes received. He was frequently unable to distinguish between the true image and its ghost, and, besides the giddiness and confusion thus occasioned, felt himself in danger in walking the streets.

Mr. Hart called the attention of the class especially to the case as one in which, from the positive and negative data above mentioned, the cause of the squint might be accurately determined. He referred it to insufficiency (paresis) of the right external rectus. The normal action of the other muscles of the eye and eyelid and of the iris, excluded cerebral causes; while the absence of far-sightedness or short-sightedness in any marked degree, and the healthy appearance of the internal fundus of the eye revealed by the ophthalmoscope, excluded dioptric or retinal disorder from the etiology of the case. The cause being thus determined, it remained to decide on the remedy. Mr. Hart pointed out that in this case the cause of the double images which occasioned so much distress was that incongruous portions of the two retinæ were, by virtue of the displacement of the axis of the strabismic eye, impressed with the respective images of each object seen. This might be remedied, then, by the use of a prismatically ground spectacle-glass, with the base turned in the direction opposite to that of the squint; for such a glass has the power of causing a deviation of rays of light incident on its base, which may thus be used to deflect the rays proceeding from objects looked at, so that they may, in the case of the squinting eye, be made to fall upon a part of the retina congruous to that which receives them in the normal eye, and thus binocular vision be restored. In fact, a prism may be used thus to fuse and destroy double images, just as, conversely, with healthy eyes, it is sometimes used in sport to produce them. Taking a series of prismatic glasses ground to scale, Mr. Hart then essayed them with this patient before the class. A glass ground to an angle of twelve degrees placed before the deviating eye so altered the direction of the images which it received as to fuse the double images into one. This, however, would only have removed the visual inconvenience without curing the squint. By now selecting a glass of ten degrees the images could be nearly fused, but not quite; and then the horror of double images, which is instinctive, caused an involuntary effort of the semi-paralytic and enfeebled rectus externus, which just succeeded in drawing the eye so far further outward as to compensate for the diminished angle of the prism, and fuse the double image. This, then, was the glass selected for the patient to wear; for by the aid of this glass the enfeebled muscle was, as it were, gymnastically exercised and strengthened. The fusion of images was not effected without an effort somewhat painful, and which could not long be sustained. Mr. Hart therefore directed the patient to employ the glass at intervals only during the day, gradually lengthening the period of exercise. In the course of seven days he had made considerable progress, could wear the glasses much longer at a time, and fuse the images more thoroughly and with less effort. He was then very anxious to rejoin his ship. Mr. Hart therefore furnished him with glasses of eight, six, and four degrees respectively, so that as the muscle became stronger a correspondingly greater effort might be required of it; the glasses fulfilling a true gymnastic as well as optical function, and acting just as dumb-bells of graduated weight, with appropriate exercise, may be made to act, in dealing with enfeebled muscles in other parts of the body. The patient was desired to communicate the result, or to show himself on his return. Recently the man presented himself quite cured. This cure was effected in the course of eight weeks. And in June he wrote to say that his eyes are now as good as ever, that the movements of the two are synchronous, and vision normal.

In another patient, now under treatment, in whom the squint was also monolateral and permanent, and on whom this method of treatment will be employed, the paresis of the abducens has followed on extreme debility after menorrhagia and lactation. Mr. Hart observed that it was essential to the good repute of this method of treatment that it should be employed with discrimination, and as the result of a careful diagnosis. It would be useless to attempt to cure by this means an alternating concomitant squint with hypermetropia, or a strabismus from active organic cerebral disease. But in every case of squint, the divergence of the eye must be regarded as a symptom, to be treated differently according to the nature of the various causes from which it arises. Sometimes a squint was the first indication of insidious meningitis in a child, of which he cited a remarkable case that he had lately seen in conjunction with Mr. Paul Jackson: then the ophthalmoscopic indications are of the highest value for the purposes of general treatment, and the squint must be disregarded. Very frequently a slight squint or confused image, due to insufficiency of the synergic action of the ocular muscles, was the first symptom of an impending acute or chronic cerebral disorder, and the ophthalmic surgeon had to yield place to the physician. In either of such cases to operate would be useless cruelty. Another set of cases were those of which the above-quoted is a fair type. Then came the large class, so admirably investigated by Donders and Von Graefe, in which squint is due to hypermetropia of the eye leading to excessive contraction of the internal rectus: in such cases, the degree of squint being measured, the division of the tendon, carefully adjusted, was followed by the best results. But to make strabotomy yield the almost uniformly successful results which might now be obtained from it, it was necessary to exclude all the cases which might be cured by other means, and also those which were incurable by any means. The application of a prismatic spectacle glass in the class of cases above defined was most successful, if carefully carried out and used for fit cases.

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37. *Atropized Gelatine.*—In our No. for July last, p. 250, we extracted from the *Lancet* of April last a notice of this article, which has led some of our readers to suppose that the credit of devising this very convenient preparation belonged to Mr. Ernest Hart, while in fact it seems justly due to Mr. J. F. STREATFEILD, the inventor of the atropine paper, who first published an account of it in the *British and Foreign Medico-Chirurgical Review* for January 1, 1864. After pointing out, in the journal just mentioned, some of the inconveniences which had attended the use of the atropine paper and his experiments to obtain a better article, he says: "I am now employing gelatine rolled out in sheets of the thickness of thin writing paper, and imbued with a definite proportion of sulphate of atropine or any other salt required. This retains the advantages of, and only requires the same mode of application as atropine paper, but *it need not be removed from the eye.* It is soon dissolved in the tears, and acts in every way well. The dose employed thus, it appears, is more quickly applied to the eye than when a similar dose has to be dissolved out of the meshes of tissue paper; and to this it is that I attribute the pain felt by some of my patients when I have used a large square of 'gelatine atropine paper.' They have not complained of pain when I have used a smaller bit (or dose), less than a whole square. I am thinking of having a check of small squares printed in green on the gelatine, to define the doses, and to make the transparent gelatine more readily visible *when about to be used*, for it need not be looked for afterwards. It is made by Mr. Squire, chemist to her majesty, 277 Oxford Street, London."

MIDWIFERY.

38. *On some of the Signs of Early Pregnancy.*—Dr. C. H. F. Routh, in a communication read before the British Medical Association at its meeting last summer, referred to the signs of the first period of pregnancy from the date of conception to the fourth month. The symptoms then observed as diagnostic were, cessation of the menses, the purple colour of vagina, and velvety feel of the os uteri, the presence of kiestine in urine, enlargement of the abdomen and breasts, and peculiar characters of areola. Only two of these, kiestine and an occasional modification of the follicles of areola, which he described, were at all certain. Auscultation was not supposed, except at the end of the first period, to assist. Naegele stated the placental souffle was heard certainly only at fourth month, Rigby at fifteenth and sixteenth week. Kennedy had, however, heard it as early as the twelfth, eleventh, and once at the tenth week, but his experience had not been confirmed by others.

The author thought by means of the Vaginoscope, which he described, and which was in the main a single or double stethoscope with a vaginal speculum attached, that he had succeeded in diagnosing pregnancy by auscultation at a much earlier period.

The earliest sound heard was a general muffled murmur, once interrupted during the pulse beat. It was difficult to describe it. It was an intensely vesicular murmur, an attempt as if it were to produce the ordinary placenta souffle. This was heard from the sixth to the ninth week generally. Its pitch was higher when the placenta was attached near the os. The ordinary placental souffle was heard generally at the ninth week, but he had heard it distinctly at the seventh and eighth week, and once at the sixth. In non-pregnant women the vaginal pulse or a single cardiac sound was heard; also the sounds of the intestines, which, owing to the solidity of the uterus, were transmitted, and distinctly heard. These he had never detected in the case of pregnant women where tumours (fibroid) existed in utero. These were heard, and besides the murmur was tubular, not vesicular, and often attended with a thrill.

The author instanced nine cases in proof: one of thirteen weeks and one day; one of thirteen weeks; one of thirteen, perhaps eleven weeks; one of eleven weeks and two days; one of twelve weeks and one day; one of ten weeks; one of nine weeks and two days; one of seven weeks, and one of six weeks and two days; in all of which early periods pregnancy had been made out by the vaginoscope. —*Med. Times and Gaz.*, Aug. 20, 1864.

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39. *Management of the Third Stage of Labour.*—Dr. Henry Eastlake read a paper on this subject before the Obstetrical Society of London (November 2, 1864).

This paper consisted of a historical, analytical and critical dissertation on the subject. Having briefly described the opinions which existed amongst the accoucheurs of times gone by, the author proceeded to give an account of the modern views and principles which govern the placental stage of labour. Dr. Eastlake laid great stress upon the hand being placed firmly on the fundus uteri at the moment the child is being expelled, the uterus being thus followed down, and the contraction maintained by gentle pressure.

He stated that external manipulation judiciously applied, was, in the majority of instances, quite sufficient *per se* to effect the expulsion of the afterbirth, without any traction whatever on the funis. He believed that the great secret was to exert the pressure during a contraction; in short, to act in unison with nature as we did in the application of forceps, where we applied our chief force at the moment of a pain. Dr. Eastlake said he had no doubt that many would imagine that after all this was no modern idea; but he demonstrated that this teaching was not definitely described and insisted on in our manuals of obstetrics. Dr. Credé, the professor of midwifery at Leipsic, appeared to be the only one who had advocated this doctrine, and brought it prominently before the profession. The author next considered the subject of retained placenta, and alluded to the various causes which arrest nature's process of extruding the afterbirth. The three steps in the natural expulsion—namely, (1), the detachment from the wall of the uterus, (2), its extrusion from the uterine cavity. and (3), its expulsion from the vagina—were duly recognized and dwelt upon. Regarding the subject of morbid adhesion of the placenta, Dr. Eastlake threw out a suggestion as to the possibility of being able to diagnose this condition by means of auscultation. He reasoned by analogy in stating that for a long time he had been fully persuaded that by means of auscultation we often possessed not only a negative but a positive sign of fœtal death. He described a peculiar modification of the uterine *souffle* which to his ear was very characteristic when fœtal life had been extinct for any time. The alteration in tone suggested the idea of a muffled sawing noise, very different to the gentle blowing murmur heard in normal cases, where a living child existed in utero. How soon the modification took place the author was unable to state, from want of a sufficient field for observation. He considered that no ergot of rye should be given in cases of retained placenta, unless we were quite sure that no abnormal adhesion or irregular contractions existed. In cases of spasm of the os uteri, where the placenta became encysted, the administration of chloroform was recommended. Another point of interest alluded to by Dr. Eastlake, bearing upon the subject of his paper, was the occasional existence of a supplemental afterbirth, which was spoken of by Dr. Barnes, Dr. M'Clintock, and other authors under the name of *placenta succenturiata*, or *placenta spuria*. He (Dr. Eastlake) had seen a specimen of such an afterbirth in the Museum of the Lying-in Hospital in Dublin, obtained from an ovum of five months. When such a mass remained in the uterus after the true placenta had been expelled, it often gave rise to secondary hemorrhage, and an impression arose that due caution had not been exercised in the extraction of the afterbirth. He agreed with Dr. M'Clintock that, remembering the possibility of such an occurrence, we should be slow to utter any opinion which would damage the character of a professional brother. In conclusion, the author alluded to the several conditions which generally authorize us to have recourse to a speedy removal of the placenta, such as post-partum hemorrhage, convulsions, rupture of the uterus, and possibly under certain circumstances, where the uterus was inverted, with the afterbirth still adherent).

Dr. GRAILY HEWITT corroborated Dr. Eastlake's statement as to the effect of the pressure over the fundus uteri, unaided by traction on the cord, in expelling the placenta, having very recently witnessed it in the case to which he was called by Dr. Eastlake. He had himself been in the habit of depending chiefly on pressure on the uterus for expulsion of the placenta, although he also held the cord just tightly enough to ascertain where the placenta was and how it was moving. He believed Dr. Eastlake's paper would have good effect in more widely inculcating a practice which he believed to be good. With reference to the effect of direct pressure on the uterus in procuring expulsion of the placenta, he had observed an interesting fact: in one case where pressure had been used for nearly an hour unavailingly, the uterus suddenly and forcibly expelled the placenta when the organ was grasped, one hand at each side, just at the junction of the Fallopian tubes with the body of the uterus. It appeared in this case, at all events, that this part of the uterus was more susceptible than others. Possibly this fact might have an application in other cases.—*Lancet*, Nov. 26, 1864.

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40. *On the Use of the Hysterotome in the Cure of Uterine Disease.*—Dr. C. H. F. ROUTH, in a paper read before the British Medical Association, after referring to Dr. Simpson's instrument, first promulgated in 1847, and his own double hysterotome in 1849, Dr. Routh stated their use appeared to be then limited to cases of mechanical dysmenorrhœa. Upon the existence and frequency of such cases authors differed. The latest writer, Dr. West, believed them very rare, and only mentioned one case, while he disapproved of hysterotomy altogether, and had known pelvic abscesses follow their employment. Dr. Routh, after showing that pelvic abscess will often result from the mere uterine manipulation, stated his belief that mechanical dysmenorrhœa in London was

not very uncommon. A thickening of the uterine mucous membrane following endometritis, a constriction, short of occlusion of the internal or external os, chronic cases of endometritis, anteversion and retroversion, fibroid growths of uterus, and congestion of the uterine organ itself, were all conditions in which the hysterotome could often be most advantageously employed. In this way, by hemorrhage, the congestion present was effectively relieved. Dr. Routh referred to cases of complete occlusion and the method to adopt before the hysterotome could be used. He pointed out the danger of using it in cases where the uterus contained uterine menses, or a large quantity of retained fluid, showing that then, by the movements of uterus during respiration, air was admitted within the uterus. For the same reason puncturing ovarian cysts per vaginam was bad because air was admitted within them, and the contents became putrid, and death from pyæmia was the common result. The uterus should first be voided per rectum.

Dr. Routh then proceeded to exhibit a variety of hysterotomes. The mistake in all the older instruments was, that the incision made above and about the internal os was as great as that made below. Death had more than once resulted from their use. Dr. Savage had beautifully shown in his plates that this was due to the circular arteries of the uterus, which, coming in at the parts near the internal os, were cut through. Dr. Greenhalgh had, therefore, invented a double hysterotome, by which the incision made was triangular—*i. e.*, small above at the internal os, large below at the external. This was most important, as in this way all risk of undue hemorrhage was avoided. This was a perfect straight hysterotome, made by Weiss, well guarded and narrow. Its only objection was its price. Dr. Savage had invented three hysterotomes—1. A straight double-action hysterotome, something like Smellie's scissors, and which, by means of the adjustment of a spring inferiorly, might cut much or little at will. 2. An hysterotome, first manufactured in France by Matthieu, having the same double triangular action as Dr. Greenhalgh's, with metal plates covering the same: by altering the position of the pins on which it worked, it could be made to cut much or little. 3. A straight hysterotome, with action same as the last, made by Weiss, as it was found that the length of incision of last varied with position of pins. These instruments were all cheaper. The first and last were made by Weiss.

The last instrument he referred to was his own, manufactured by Coxeter. Having found that in cases of anteversion and retroversion, it was sometimes very difficult to put in a straight instrument, he had devised one with a curve, like Simpson's sound. This curve was the arc of a circle, and extended to three times the length of the uterine portion of the instrument; so that the blades, moving on the same plane, could cut very easily. The internal mechanism was in the main the same as that adopted in Dr. Savage's French instrument. It was the cheapest of the English instruments.—*Med. Times and Gaz.*, Aug. 20, 1864.

HYGIENE.

41. *Effects of Tropical Climates on the European Constitution.*—Mr. Wm. Martin, late surgeon Bengal Army, in an interesting paper on this subject (*The Medical Mirror*, Oct. 1864) states: "It is a well established fact, that of those Europeans who make India their residence, a considerable proportion droop and die, or are forced to seek their native air, and with regard to those who become acclimatized, their progeny has, as far as I am aware, in no instance survived to the third generation, *i. e.*, no three successive generations of pure European race have been known to survive. The same, no doubt, would be the case with regard to the natives of tropical climates, who might come to reside in Europe.

"One of the first changes," he remarks, "caused by the removal of a European to a tropical climate, is that of the function of the skin; the perspiration being in most cases greatly increased, sometimes to an inordinate degree. If it be only moderately increased, as is the case with Europeans arriving in India during the winter, when the average temperature may equal that of one of our cool summers, and with those who have become acclimatized, on the approach of each hot season, it affords the greatest relief to the system. An increased amount of perspiration. compared with what obtains in cold regions, for residents in warm climates, must be considered the normal condition. The secretion of the liver is also, in a large majority of cases, increased in the early period of residence, and this is to be considered always as a morbid process to be carefully watched, and, if possible, guarded against; and where it occurs, it must be reduced within due bounds, or it will become a fruitful source of disease, at first functional, eventually, in all probability, organic. It is with respect to this function of the liver that so much caution is required by visitors to warm climates, for on its perversion depends in great measure the amount of derangement of health which occurs among them. On the other hand, the action of the lungs becomes lessened, chiefly if not entirely, in consequence of the increased action of the skin. The great effect this must have, we perceive, when we reflect, that although from the rarefaction of the atmosphere in a hot climate, the lungs must become expanded to a certain extent, yet that this rarefaction is occasioned solely by the increased temperature, and not by diminished atmospheric pressure, as we find to be the case in elevated regions. Consequently the amount of oxygen to be taken in is rather diminished than otherwise, and all the parts concerned in the process of respiration are not called into more vigorous action as they would be in a hilly country, but the reverse; the result of this and of the increased amount of perspiration, is that the work of the lungs is lessened, and this to a considerable extent; so much so, that a most material relief is afforded to the entire system, and if the new arrival be very cautious as to his habits, and particularly the diet, and only so much food of the proper kind be taken as will be digested and assimilated with ease, and the excretions through the lungs, skin, liver and other organs, only task the power of those organs moderately, he may perhaps have nearly as good a chance of preserving health as if he continued to reside in Europe. Should he be naturally inclined to pulmonary disease, the amount of relief to the system afforded in India by the diminished pulmonary action is so great, that he often will enjoy better general health than he did in his native clime, and even will have his life preserved by his change of residence.

The influence of the increased heat of tropical countries upon the skin. in augmenting the amount of perspiration, is so well known, that it does not require expatiating upon: but we may remark that this increase may exist, and often through bad management to a prejudicial extent. It is possible to exceed in the amount of fluid drank; the perspiration, after being inordinately increased, may be suddenly checked; and this counteraction may be in its ultimate effects as dangerous as another condition of the skin, which leads to consequences more directly fatal, in which the perspiration, at a time of excessively sultry heat, becomes suppressed, as is seen to be the case previously to attacks of sunstroke, or insolation; more properly called heat asphyxia. In persons of intemperate habits, an inordinate perspiration is often produced by the very indulgence in intoxicating substances. The system is then left in such a condition that it cannot resist malarious or other noxious agencies; some evil influence will enter the body through the open pores of the cutaneous surface; and the effects of this will be much aggravated by the cooling of the skin, which takes place subsequently, and the rapid contraction of its surface, which renders it incapable of performing its function effectively. In this way seem to arise a large proportion of the deadly diseases so rife in tropical climates; those especially which arise from malaria, also non-malarious dysentery, continued and remittent fevers, cholera, &c.

The liver is, next to the skin, the organ most altered in its action by transference of residence from a cold to a hot climate. Its action is almost always increased to a certain extent, but if great care be taken by paying due attention to regimen, &c., this will pass off, in most cases, in a short time, if the new arrival commences his residence in the hot season, and the skin, with the action of which that of the liver is vicarious, acts freely for a continuance. If he begins his residence in the cold season, he may escape any over-action of the liver altogether; or if it occurs, it will be less in degree, and will be more tractable than in the other case. This increased action is of the nature of functional derangement, and is no doubt attributable to hyperæmia of the organ. This causes at first increased secretion simply, with sympathetic functional derangement of the stomach, and probably of the skin, lungs, &c. If this be speedily checked, and everything is favourable as regards season, and non-malarious condition of the atmosphere, &c., things will return to their original state; otherwise, structural degeneration may occur; but more often than that, there remains a functional derangement of the liver, involving changes of other functions; particularly those with which the liver sympathizes; alteration of the constitution of the blood, &c. The derangement is often of such a serious nature, that a proper acclimatization in India is rendered impossible, and change of climate of some kind becomes necessary. In milder cases, the over-action of the liver is succeeded by a corresponding torpor; and this again, while the constitution retains its vigour, by a fit of over-excitement; these opposite conditions alternating for some time. Consequently, there is always an irregular and vitiated state of the biliary secretion, with its necessary concomitants, impairment of the nutritive and nervous functions of the body generally. This state of hyperæmia of the liver, although produced in the first instance by increased temperature, is kept up very often by local influences, such as produce malaria. In fact, it exists to a greater extent in comparatively cool weather, as in the rainy and cold seasons in India, than in the hottest. In few cases, however, would the exciting cause act, but for the predisposition caused by the increased temperature. Again, in addition to heat, it seems that there must be some influence which arrests the action of the skin, for it has been remarked that in seasons in which the heat has been great, but without moisture, and consequently in which there has been no impediment to a very free action of the skin, there has been an unusual freedom from congested livers. There is no doubt, however, that long-continued heat, even if dry, will of itself, under certain circumstances, produce a state of hyperæmia.

Acute hyperæmia, or inflammation, often, according to the nature of the exciting causes of disease applied, leads to structural changes, abscess, fatty and other degenerations, &c.; with these may be conjoined the effects of fevers, dysentery, dangerous affections of the kidneys, spleen, &c. Sometimes, there is a protracted condition of chronic hyperæmia, which is too often known only by its effects. The patient experiences nothing perhaps but a general feeling of discomfort, and a state of torpor of the mind and of the functions of the nervous system, and of the principal organs, while organic changes are taking place, which will often be found to be irremediable. Frequently the disease commences in a state of sub-acute hyperæmia, in which there is pain, but not of a severe character, little disturbance of the stomach, only torpor of the chylopoietic functions, with some degree of pyrexia; and this state may merge, according to the nature of any reapplied exciting cause, such as errors in diet, the influence of heat or cold, or wet, or any combinations of these on the patient's peculiar constitution, whether irritable or torpid, into an acute or chronic state of inflammation or hyperæmia. The final results are increase of volume of the liver, sometimes to an enormous extent, or hepatic abscess or exhausting diseases of the bowels; the only chance for saving life being an early change of air, the removal of a European to his native, or at any rate, a milder climate, being, with some exceptions, the most likely means to lead to a restoration of health."

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42. *Action of Water on Lead.*—Dr. B. W. Richardson makes (*Med. Times and Gazette*, Oct. 29, 1864) some very interesting and important remarks on this subject. He observes:—

"Until recently the popular creed, professional as well as public, on this subject has been that—

"1. Pure or soft waters alone act[1] on lead, and do so in proportion to their purity or softness.

"2. A minute proportion of certain neutral salts in water prevents its action on lead.

"3. Hence hard or impure waters do not act on lead, and may be safely stored in leaden cisterns and conveyed through leaden pipes.

"In 1858, however, Dr. Lauder Lindsay, of Perth, laid before the British Association[2] the records of a series of experiments and observations made by him on this important subject during the previous year. His main or general results were tabulated in the following series of propositions,[3] viz., that—

"1. Under certain circumstances pure or soft waters *do not* act on lead.

"This was well illustrated by the results of the inquiry instituted in 1854–5 by the Town Council of Glasgow, in connection with the proposed water supply to that city from Loch Katrine. This inquiry cost £5000, and was of the most extensive kind and exhaustive character. It proved *inter alia* that Loch Katrine and other equally pure or soft waters (containing under 2 or 2¼ grs. per gallon of solid matter, with a hardness of 0.6 to 0.8 of Clarke's scale) exerted, under given circumstance, no deleterious action on lead.[4]

"2. Hard or impure waters, sometimes containing abundance of the very salts which are generally supposed to be most preservative or protective, *do act* on lead, and with the same rapidity and efficiency as pure or soft waters. This was illustrated by the destruction of lead cisterns, through the erosive action of hard water, in the Murray Royal Institution (an hospital or retreat for the insane of the middle classes), near Perth, of which Dr. Lindsay is the physician. This early destruction of lead first directed his attention to the subject.[5]

"3. We are in possession of no satisfactory information anent the causes of the varying action, under different circumstances, of waters on lead; information, that is, which is of any practical use in assisting either in predicating or preventing lead-erosion or lead-contamination.

"4. *Experimentation on the small scale*, and for short periods, is most fallacious, and frequently dangerous in regard to the practical conclusions thence to be drawn.

"5. Contamination of water, both hard and soft, impure and pure, by lead is, in all parts of the kingdom, and under every variety of circumstances, the cause or source of various obscure diseases of man (and also, doubtless, of the lower animals), of the nature especially of dyspepsia and colic. This proposition was abundantly proved by cases of minor diseases induced by lead-contamination of various of the hard or impure waters of London.

"6. So uncertain is the action of water on lead, so impossible is it to predicate the nature or extent of that action under the varying mechanical and chemical conditions of water supply of houses and towns, so difficult is it to prevent the possible dangers, so numerous and excellent are the substitutes[6] that may be provided for lead in the construction of cisterns and pipes, that it is desirable henceforth to *abolish the use of lead as a material for the conveyance or storage of water.*

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[1] When not otherwise specially explained, this action on lead refers only to that which, by virtue of its nature or extent, renders drinking or cooking waters dangerous or deleterious to men.

[2] Chemical Section—Leeds Meeting, September 24, 1858.

[3] These will be found given in his paper "On the Action of Hard Waters upon Lead," in the *Edinburgh New Philosophical Journal* for April, 1859.

[4] Papers on the "Glasgow Water Works," read before the Institution of Engineers in Scotland, Session 1863–4, by Jas. M. Gole, C.E., and Engineer to the said Works. Glasgow, 1864. p. 22.

[5] *Vide* the published Medical Reports of said Institution for the years 1859 (p. 36) and 1860 (p. 14).

[6] The substitutes in question are of very various kinds. Those most commonly used seem to be—for piping—iron or lead tubes, protected by various innocuous compositions, metallic or otherwise. In the great brewing establishment of Messrs. Allsopp & Sons, at Burton-on-Trent, enamelled pipes have been laid throughout their premises. These are iron tubes, enamelled under the patents of Mr. Paris. The enamel, or fused glass, is applied both externally and internally, so that the iron is completely encased; it is incorporated with the metal while it is nearly at

"This *practical* proposition, to which all the others converge or lead, is now being adopted and acted upon by all our most competent and eminent authorities.

"The Royal Victoria Military Hospital at Netley, which ought to be the embodiment of all modern progress and discovery in sanitary science and hygiene in their applications to the construction of human dwellings, uses *no lead* in its water cisterns or pipes. A writer in *Good Words*[1] says of this hospital: 'The *water supply* has been carefully attended to, and to prevent the possibility of patients suffering from *lead contamination*, not an atom of that metal has been used in the construction either of the pipes or cisterns. The former are made of block *tin*, and cost £9000. It would be well for the health of the community if in our private houses similar precautions were used.

"The Commissioners in Lunacy for Scotland in their regulations anent the construction of lunatic asylums, remark in regard to water supply:[2] 'It is of the utmost importance that there should be a constant and ample supply of *good water, of which a careful analysis should be made, with a view to determine the proper materials for pipes and reservoirs*, and also in order to ascertain its fitness for the purposes of drinking and washing.' The reporters add: '*Lead is an objectionable material for pipes and reservoirs as adulterating the water.*' Dr. Hassall, the 'Analytical Commissioner' of the *Lancet*, and the author of the well-known standard work on 'Food and its Adulterations,' says: 'From the number of samples of water I have received containing lead, I am induced to believe that that metal is more frequently introduced into the system in this way than is commonly suspected. Indeed, so many well-ascertained cases of *lead poisoning*, arising from the use of water contaminated with it, have occurred, that I am of opinion that the *use of lead for the storage and conveyance of water ought to be entirely discarded*, especially in the cases of small towns and single houses.'[3]

"Again, the late Dr. Dundas Thomson, President of the Metropolitan Assosiation of Medical Officers of Health, who had for many years given, as a chemist, great attention to the subject of water supply, and than whom, on such a subject, there are no more competent authorities, remarks: '*It is impossible too strongly to condemn the use of lead pipes and cisterns. They should never be used for conducting and retaining water for drinking and culinarg purposes. It is difficult to understand the origin of the employment of a poisonous metal for domestic use.* But its disuse must depend upon the substitution of the builder or iron pipe fitter for the plumber, who has too long monopolized the manufacture of this noxious form of cistern.'[4]

"The Americans apparently attribute a greater value to this subject than we do, having devoted a goodly volume to the now bulky evidence *pro* and *con.*[5]

"In 1859-60 the great lead and water question was the subject of much public discussion in the columns of the *Times*. The result was a general feeling that the public safety lay in the *abolition of lead in the construction of cisterns and pipes for water supply*—some writers going so far as to recommend a *prohibition by Government* of such use of lead."[6]

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a white heat. The same enamel may be applied as a coating for the surface of vessels used for culinary or domestic purposes.—*Builder*, April, 1860.

[1] Article on the Victoria Hospital, *Good Words*, December, 1863, p. 883.

[2] "First Annual Report (1859):" Appendix C., No. 1, section 6, and No. 2, section 30, pp. 115 and 118.

[3] On "Unsuspected Sources of Lead Poisoning," *Lancet*, April 7, 1860.

[4] On the Proper Sources of Waters for Domestic Supply, *Transactions* of the National Association for the Promotion of Social Science, 1862, p. 615.

[5] "Collection of Reports [Condensed] and Opinions of Chemists in regard to the Use of Lead Pipe for Service Pipe in the Distribution of Water for the Supply of Cities." New York. 8vo., cloth, pp. 343, 9*s*. London: Trübner & Co. 1859.

[6] *Times*, October 1, 1859.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

43. *Physiological Actions of Dajaksch, an Arrow-Poison, used in Borneo.*—Dr. PETER M. BRAIDWOOD gives (*Edinburgh Medical Journal*, August, 1864) an account of some very interesting experimental researches as to the action of a new arrow-poison used in Borneo.

The following are his conclusions:—

1. That this arrow-poison, dajaksch, produces death by paralyzing the heart; which is proved further by the fact. that, after ligature of the heart, death results in the same way and in about the same time as after poisoning with dajaksch.

2. That the cessation of the cardiac contractions is brought about through a paralysis of the cardiac ganglia of the sympathetic. exactly as the same is seen on performing Stannius' experiment. In other words, that with this poison we have a much finer means of performing Stannius' experiment than the knife and forceps afford us.

3. Hence, that the ventricle first ceases to contract, because the ganglia situated between it and the auricles, and which for the most part supply the ventricular sympathetic nerves, are first paralyzed. Then that the auricles become motionless after the ganglia supplying them (the ganglion of the sinus venosus in frogs) are paralyzed.

4. That the other general phenomena produced by this poison, as paralysis of general sensation and motion, etc., may be considered as the natural results of the paralysis of the heart.

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44. *Poisoning by Chloroform.*—Dr. MACKER related the following case to the Medical Society of the Haut Rhin. A soldier, aged 27, on furlough, and in a state of drunkenness for several days past, seeing a bottle on a table, which he thought contained alcohol, drank off its contents, which consisted in fact of 12½ drachms of chloroform. He was found soon after vomiting, and soon became insensible, still continuing to discharge mucosities. The pupils were enormously dilated, and his aspect was cadaveric; the respiration was stertorous, the pulse 100, and feeble, and the action of the heart occasionally tumultuous. There were present utter loss of consciousness, complete resolution of the limbs, and absolute general anæsthesia. After a short period the pulse became insensible, the respiration was arrested every now and then, and there was tracheal *râle.* Stimuli to the surface and artificial respiration were resorted to, and strong coffee infusion was injected. This alarming condition continued three hours, the anæsthesia remaining complete and the pupils dilated, while occasional contraction of the limbs was observed. An hour later, however, the pulse rallied, and the skin became warmer, but anæsthesia still persisted. At the end of the sixth hour, the amelioration was very manifest, and in another hour he was carried to the hospital. He retained no memory of what had passed, and neither convulsions nor delirium ensued; and next day he complained of little but what might be due to his excess in drinking.—*Med. Times and Gaz.*, Nov. 5, 1864, from *Union Méd.*, No. 127.

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45. *Poisoning by Tobacco-leaves externally applied.*—M. BERNARD related to the Academy of Sciences on July 11th, on behalf of M. Namias. the case of a man who some months before enveloped his whole skin in tobacco-leaf, for the purpose of evading the payment of duty. The tobacco, softened by the perspiration, produced true poisoning. Under the use of alcohol and laudanum, the patient recovered. He had an extremely weak, small pulse, cold sweats, and general prostration, during the time he was under the influence of the poison. M. Namias thought there was no other case on record in which poisoning by tobacco has occurred through absorption by the skin.

At a subsequent meeting of the Academy, as bearing upon the above communication, M. Gallavardin sent in a paper, in which he adduced several cases of poisoning by the external application of the leaves of tobacco. He reports that in 1801 a whole squadron of cavalry covered their bodies with tobacco-leaves, for the purpose of smuggling these leaves across the frontier; and all suffered from vertigo, headache, and sickness. This instance is related by Von Hildebrand, in *Hufeland's Journal*, vol. xiii. In 1844, a woman fifty years old, after the external application of tobacco-leaves, suffered from nausea, spasmodic vomiting, hiccup, oppression of breathing, attacks of suffocation, prostration, coldness of the extremities, cold, clammy sweats, and slow and intermittent pulse. This case is recorded by De Meyern in the Prussian *Medicinische Zeitung*, No. 8, for 1844. In a third case, in which dried tobacco-leaves with honey were applied to the limbs of a robust peasant, aged thirty-seven years, who was suffering from chronic rheumatism, the following symptoms were observed: Headache, congestion of the face, vertigo, trembling of the limbs, nausea, vomiting, a small and slightly accelerated pulse. This case is published by M. Polk in the same Journal for 1854, No. 52.

Symptoms of tobacco-poisoning have also been observed after the application of tobacco-juice to a chronic eruption on the neck (Lauderer); after the external application of tobacco (Truchsess); by frictions made with the residue left after smoking tobacco on parts denuded of skin (Westrumb); after the employment of tobacco-juice to an ulcerated surface (Walterhall); after the application of tobacco in powder to a wound in the thigh (Keskring); after the application of an ointment made up of tobacco and butter to three children with scald heads (Kerkring); after enveloping the arms, hands, thighs, and hams with linen dipped in a very hot strong decoction of tobacco (Marrigues).

From these observations, M. Gallavardin concludes that, without doubt, tobacco applied to the skin, whether abraded or not, may poison the body. The great value of his paper lies in its historical character, and in the correction it supplies of the suggestion by M. Namias, that his case was unique.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1864, from *Comptes Rendus*, July 11th and Aug. 1, 1864.

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46. *Poisoning from Cauterization with the Acid Nitrate of Mercury.* By Dr. VIDAL.—Cauterizations with the acid nitrate of mercury are made daily and without any particular precautions. We are apt to forget that this substance not only acts locally as a caustic, like sulphuric acid, Vienna paste, etc., but that, like arsenical pastes, it is liable to be absorbed, and that, as the result of a too extensive cauterization, mercurial poisoning may occur. Facts of this kind are too important to be passed over in silence. Dr. Vidal brought before the Society of Biology a fact of this nature. The patient was a woman twenty-six years of age, of weak constitution, chloro-anæmic, who was admitted into the Hôtel-Dieu, suffering from most severe pain, the result of a large and deep cauterization. By an inconceivable carelessness, the person who attended her had made a mistake as to the bottle, and, instead of the liniment ordered, had employed in frictions part of the contents of a bottle of the acid nitrate of mercury. The frictions had been made with a piece of linen saturated with the liquid, and in spite of the patient's cries of pain, had been persisted in for five or six minutes. When the patient was brought to the hospital there was found on the left side of the chest, and in a space of the size of two hands, a large eschar of a brownish red colour, swelled, and projecting above the healthy parts. Behind, and on a level with the left scapula, was a second eschar about the size of the hand; the skin, acutely inflamed, was of a bright red colour, had an ecchymosed appearance, and scattered over it were yellow brown patches; from this downwards towards the right haunch proceeded a similar tract about half an inch broad, occasioned by a portion of the liquid having flowed down below the limit of the part rubbed. The patient was in a state of prostration and extreme anxiety; during the night she had several attacks of bilious vomiting. Dr. Vidal found her next morning in a most dangerous state; her skin was cold, her features contracted, her eyes sunk, her face pale and livid, her voice feeble and almost suppressed. The patient had extreme epigastric pain, and suffered almost constantly from nausea without vomiting; she frequently fainted. The pulse was small, frequent, thready. There was constipation; the urine was suppressed. The patient had administered to her a mixture containing rum and tincture of

musk, as well as warm stimulating drinks. The following morning she had vomiting of bilious matter streaked with blood, and the extremities continued cold and cyanosed. The gums were swollen and bleeding; the buccal mucous membrane was red and tumefied, and after visit a very characteristic blackish line formed on the free border of the gums, which was very well marked around the insertion of the incisor and canine teeth of the lower jaw, but was less marked around the molars. The belly was flaccid; constipation continued. The patient made no water; the bladder was empty. Vomiting continued in spite of the use of ice and Seltzer water. On the fourth day after the poisoning, the eschars, surrounded by an inflammatory border, began to be detached. The matters vomited were glairy and tenacious, but vomiting was rather less frequent than before. On the sixth day vomiting had ceased, but diarrhœa was severe and accompanied with colic. The patient complained of extreme weakness, dizziness, and ringing in the ears. The coldness of the surface persisted, the pulse was 140, small, and thready. During the following day the weakness increased; the voice was almost suppressed, the patient only answered by signs when attempts were made to rouse her from the semi-comatose state in which she lay. She died quietly on the ninth day after the accident, at three o'clock in the afternoon. On post-mortem examination, the mucous membrane of the stomach had an arborescent red appearance, studded with ecchymotic patches. The same ecchymoses were found throughout nearly the whole intestinal canal and in the urinary bladder. The blood was black and fluid. On microscopical examination, the renal parenchyma was found much injected, especially in the neighbourhood of the Malpighian bodies; the epithelial cells were irregular in shape, granular, and partially destroyed. M. Flandrin, who undertook the chemical analysis, found a sensible quantity of mercury in the liver, but no trace of it in any of the other organs.

The above observation is interesting for several reasons. It is a very remarkable example of poisoning by the external application of a caustic salt of mercury. It is one of the cases of mixed poisoning, where the substance employed, consisting of a salt of mercury and an irritant and corrosive acid, gives rise at once to irritant and specific symptoms. Special attention should be directed to the existence of ecchymoses in the intestinal and vesical mucous membranes, and to the change in the kidney, which was evidently produced by the elimination of the toxic agent. The epithelial cells, granular and altered in shape, obstructed the tubes and prevented urinary excretion. This granular fatty condition of the renal epithelium is analogous to the lesion regarded as characteristic of poisoning by phosphorus. M. Potain has also found it in a case of poisoning by ammonia. We must then be careful not to speak of this lesion as *characteristic* of poisoning by phosphorus. No doubt, fatty degeneration of the liver and kidneys takes place very readily in poisoning by phosphorus, but other forms of acute poisoning may give rise to the same lesion. This, then, is a lesion which is to be attributed not to a particular kind of poison, but to a form of poisoning. When corrosive substances which have been absorbed are eliminated more or less slowly by the kidneys, the liver, the glands, etc., they produce an anatomical alteration of the elements of the organs which they traverse, and fatty degeneration is the most frequent of the lesions so produced.—*Ed. Med. Journ.*, August, 1864, from *Gazette des Hôpitaux.*

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Apparent Death from Chloroform; Recovery. By JOHN H. PACKARD, M. D., one of the Surgeons to the Episcopal Hospital, Philadelphia.

Joseph Cheatham, æt. 49, an Englishman by birth, was admitted into the Episcopal Hospital Oct. 27, 1864, in order to have a cystic tumour removed from his back. It was about as large as an orange, and seated over the lower ribs, a little to the right of the median line. Another tumour of the same kind, about as large as a walnut, existed in the left axilla.

He was totally blind, and had been so for about five years. His complexion was sallow, his hair and beard gray, his features thin, and his figure slight. His general appearance, therefore, was not robust, although not unhealthy. There was no arcus senilis, and no sign of thoracic disease.

On the 30th, he was put under the influence of chloroform, for the purpose of having the tumour removed. The chloroform was of Powers and Weightman's manufacture, and had been three weeks on hand in the hospital; it was administered very carefully by Dr. Cheston, one of the resident surgeons; but the method employed, by means of a rather thick sponge, with a towel folded into a cone placed over it, was not the one I generally use except for sulphuric ether. For chloroform I prefer either the simple cone made out of a towel, or Simpson's plan of dropping the liquid upon a single thickness of fine linen or muslin laid over the nose and mouth. As the chloroform was poured freely upon the sponge out of a very large bottle, half full, no estimate can be made of the exact amount given in this case.

No one was in the operating-room except the two resident surgeons, Drs. Cheston and Woods, the attendant nurse, the patient, and myself. Anæsthesia was induced without any unusual phenomena, and I had begun the operation, when Dr. Cheston informed me that the pulse was flagging. The man was now lying on his left side, well over, with his right arm drawn across his chest. His pulse sank, and ceased. His respiration continued a little longer, and then ceased also. His surface became pale and livid, his eyes were glazed and turned upward, and his whole aspect was that of a man just dead.

Upon the first appearance of these alarming symptoms, I abandoned the operation (the cyst had first burst open), and began to make active efforts to keep up respiration by intermitting pressure on the chest-walls and abdomen. Dr. Cheston poured some brandy with carbonate of ammonia down the man's throat, and drew his tongue out with a pair of forceps. None of these means seemed, however, to take any effect, and by my direction, Dr. Woods now hastened to procure an electro-magnetic battery from one of the wards; this was immediately put in operation, one pole being placed over the upper dorsal spinous processes, and the other about over the apex of the heart.

A very short time elapsed before Dr. Cheston announced the faint return of the pulse at the wrist, and then its increase in strength and volume. Soon a long deep sigh was drawn, and respiration became again established. The livid paleness of the face gave way to its ordinary complexion, and the eyes lost their glassy, upturned stare. The battery was kept gently in action until the restoration was placed beyond a doubt, and then discontinued.

Tincture of iodine was freely painted over the inner surface of the serous cyst, and a simple dressing applied. The case subsequently progressed well.

As might be supposed, the intense excitement of such a scene to all those present, precluded our noting its exact duration; but my impression is, that for at least eight or ten minutes, this patient was without pulse or breathing, and exhibited all the phenomena of recent death.

I have given chloroform, and seen it given, in hundreds of cases, but never before was witness to any accident from its use. I had taken the precaution of examining the chest beforehand, and have since done the same, without finding any evidence of disease, nor do I think that the battery would have had any restorative effect had any organic lesion of the heart or lungs caused the alarming symptoms above described.

The quantity of the anæsthetic given cannot have been the source of the trouble, nor do I think the patient's position, rolled over on the left side, with the right arm bearing across the chest, could have caused it; for both these conditions have repeatedly been present without such consequences, while on the other hand they have not always been present in the reported cases of death from chloroform.

I am indebted for the following notes of another case, less fortunate in its issue, to Dr. CLINTON WAGNER, Assistant Surgeon U. S. A., in charge of the U. S. A. General Hospital, at Beverly, N. J., in one of the wards of which it occurred.

Private J. K., Co. D, 7th Reg. N. Y. Vols., was admitted into the U. S. General Hospital, at Beverly, N. J., on the 28th of September, suffering from gunshot wound, requiring amputation of the leg. Chloroform was administered in the ordinary way, and in sufficient quantity to produce anæsthesia during the operation. No unpleasant effects were produced by the drug at this time. Sloughing of the flap supervened, and the bones protruded to such an extent, that on the 15th of November a second amputation was decided upon; at this time, his general condition was favourable for an operation, and there was nothing in his appearance, nor any symptom present, to contra-indicate the administering of chloroform, except nervous agitation arising from dread of the operation.

The chloroform was from the U. S. Army Laboratory in Philadelphia, and had been on hand but a short time. It was administered upon a sponge, freely diluted with atmospheric air. About a drachm and a half was poured upon the sponge at one time, and in all, about half an ounce was given. The room was well ventilated. The patient had been under its influence about fifteen minutes, when he began to sink, and in about five minutes death took place. Six medical officers were present, one of whom administered the chloroform. The ordinary means of restoration were resorted to, such as cold water dashed into the face, inhalation of ammonia, Hall's ready method for producing artificial respiration, &c. An autopsy revealed no visceral lesions sufficient to account for death. The heart and the lungs were perfectly healthy. The brain was not examined.

Remarks.—This case presents several points of interest. The drug was administered by a medical officer, five others being present; and it is unnecessary to say that due care was observed to guard against accident. Only a few weeks before, the anæsthetic had been given to the same individual in a much larger quantity, a fact which, in connection with the absence of visceral lesions, proves that there was nothing to contra-indicate the employment of the agent. Death was not sudden, but came on gradually, showing, perhaps, that the nerve centres were paralyzed by the poison, and that the heart was not primarily affected.

Case of Trephining—with good result. Operation by Assistant Surgeon Theodore Artaud, U. S. Vols., in charge of Soldier's Rest, Alexandria, Va. Reported by S. D. Twining, A. A. S., U. S. A.

Private Philip A. Weist, Co. A, 50th Regiment Penna. Vols., born in Schuylkill Co., Penna., a carpenter by trade, was wounded July 30, 1864, at the battle of Petersburg, by a spent minie ball imbedding itself in the integument and muscle of the left side of the head (from which it was soon removed by the hand), causing a fracture, and depressing a portion of the skull a little above and to the left of the occipital protuberance.

The patient says he was stunned by the blow at the time, but arose and walked to the Field Hospital, when he became unconscious, and remained so for eighteen hours; the next day he left for his regiment, not knowing his injury was so great; he was then returned to hospital, where he remained for one week; during this time the headache was severe, and the patient was unable to see or hear well.

August 11, 1864, he was admitted to the Soldier's Rest Hospital, Alexandria, Va.; he was unable to walk to his bed; he seemed to improve for two days, then he grew worse, suffered pain through the frontal region of the head, especially over left orbital ridge; and on the 16th was unconscious for about two hours. It was then, after consideration, deemed advisable to remove the depressed portion of bone. The patient was brought on the table, ether was given, and after shaving off the hair, a conical incision was made directly over the injury, size one and a half inch, and the occipito frontalis muscle was dissected up; the skull was found indented one-half an inch, making a very regular and cupped-shaped depression three-quarters of an inch in diameter, and showing a slight crack around its edge, and an irregular one across its centre; the trephine was then applied, partially covering one side of the depression, and a portion of the skull removed; depressed portions were removed by the elevator, exposing the dura mater, which was found to be healthy; a circular tent was applied over the exposed portion of the brain, and the wound dressed with cold water dressings. Morphia was given to quiet the patient.

August 17. Treatment continued; porter given; patient sitting up.

20*th*. Same dressing; ext. hyoscyami, gr. i at night; walking about.

26*th*. The patient was seized with violent signs of temporary congestion or compression; this was relieved by sinapisms to the neck, abdomen, and extremities, ol. tiglii gtt. ss, and afterward the wound, which had nearly healed, was enlarged and kept open with tents for three days, with but slight inconvenience to the patient.

Sept. 1. Slight headache in the morning; condition good and improving; rests well; good appetite.

10*th*. Seems to be growing stronger; rests well at night; appetite good.

22*d*. The wound has now entirely closed; the patient complains occasionally of a slight headache, due probably to malarial influences; his appetite and general condition are good, and he is to all appearance cured.

The interesting features of this case are the long time between the injury and the operation, and yet no disease of the membranes, and the complete success of the operation.

Case of Gangrenous Erysipelas of Penis and Scrotum. By A. W. KING, M. D.

During the prevalence of epidemic erysipelas in April and May, with the assistance of Dr. Sapp, of Birmingham, Ill., I treated a case of *gangrenous erysipelas* of the genitals in the person of Mr. Newton Donegan, of this place. The disease resulted in sloughing of two-thirds of the skin and cellular tissue covering the penis and the entire scrotal sac, except a small flap about the size of a two-shilling piece, covering the lower portion of the cord and upper portion of epididymis of left side. The case had received no treatment previous to the sixth day of the disease, when the parts became clouded and mottled with the dark patches of gangrene. Three days later the slough came away, leaving the greater portion of the body of the penis and the testicles, cords, &c., entirely exposed.

For a few days we gave the patient tonics and anodynes as seemed to be indicated. The only local applications used were fine linen cloths saturated with mucilage of slippery elm bark—in which the genitals were entirely enveloped—and occasional syringing with infusion of oak bark. In a few days adhesions were noticed between the edges of the surrounding skin and the testicles, then healthy granulations shooting out from the edges, and soon softening and elongation of the skin. These processes continued uninterruptedly for three or four weeks, when the covering was complete, and our patient able to go to work. Almost the whole of the new scrotum is formed by the stretching and elongation of the skin from the inside of the thighs, and from the perineum—scarcely one-fifth of it being new formation.

DOMESTIC SUMMARY.

Pathology and Treatment of Hospital Gangrene. Turpentine as a Local Application.—Several cases of hospital gangrene have been recently received into the West End U. S. General Hospital, Cincinnati, which furnished occasion for some instructive and judicious observations by Dr. Robert Bartholow, Act. Ass. Surg. U. S. A. in charge, on the pathology and treatment of this affection.

Hospital gangrene exists, he observes, in two forms in the army. First a true hospital gangrene, transmissible by contagion from wound to wound; and a second, a pseudo hospital gangrene. In the first form, which is much less frequently observed, the application of a morbific agent, either through the medium of the atmosphere or by actual contact, induces a rapidly destructive inflammation and death of the tissues. It is a peculiarity of this inflammation, that it has no boundaries and spreads with great rapidity through all the tissues, but especially through the connective tissue; the contact of the decomposing sloughs being sufficient to keep up the morbid action. In this form of gangrene the local lesion precedes those grave constitutional complications—"the typhoid state." In the other form the local disease, the sloughing, the pseudo gangrene, appear at a period subsequent to constitutional infection. Soldiers in the field are subjected to various influences, which lower vitality; their blood is impoverished by insufficient diet, fatigue, and exposure to vicissitudes of temperature and to malaria. These influences impair the secondary assimilation, and consequently lower the reparative process in injuries. In a soldier whose vital powers are thus weakened, a gunshot-wound or injury is very apt to assume the sloughing or gangrenous character; and the variety or extent of the local action will depend upon the degree in which scorbutus and malaria have vitiated the blood.

How shall these two forms of hospital gangrene be discriminated? How are the points, if any, in the different diagnosis? The history of the case, and the character of the local lesion are the only means of determining this interesting question. If the constitutional have preceded the local symptoms, and evidences of the scorbutic taint and malarial cachexy have existed, it may be presumed that we have to deal with the pseudo gangrene. This presumption will be converted into certainty, if there be present no sources of infection and the sloughing presents the characters peculiar to the pseudo gangrene. What are these characters? In the pseudo gangrene the sloughs are never so extensive as in true gangrene, the boundaries between healthy and diseased textures more clearly marked and the inflammatory zone surrounding the sloughing tissues less vivid. In the pseudo gangrene there is less rapid extension of the disease, and rarely those large and sudden detachments of masses of skin and connective tissue; but the gangrene spreads more slowly and equally, the sound structures presenting pretty well defined healthy margins. How shall we treat the varieties of hospital gangrene? It is obviously important to recognize whether it is a local disease followed by secondary constitutional complications, or a constitutional discrasy producing secondary local phenomena. In the first form, or the true hospital gangrene, we may rely on topical applications, escharotics, actual cautery, &c., since the destruction of the local morbid process prevents constitutional or systemic infection and enables the reparative process to assume its normal direction. In the second form or pseudo hospital gangrene, topical medication is of secondary importance; the discrasy must be corrected, the secondary assimilation restored to its healthy state, by vegetable food, animal nutriments, porter, ale, &c., and the local morbid process changed by suitable dressings.

Bromine has acquired its reputation in the cure of hospital gangrene, by its general use in this form. To insure a successful application of the bromine, it is necessary to apply it to the structures not yet invaded by the gangrene, and hence the sloughs must be carefully dissected off. This is a tedious process, and the application of the bromine to the sound tissues is acutely painful. Moreover, bromine itself thus applied, produces a slough which may be, and is not unfrequently, mistaken for an extension of the gangrene, requiring renewed applications of the escharotic. These are strong objections to the use of this agent. There can be no doubt that thus applied it is quite effectual, but not more so than nitric acid, permanganate of potassa, chloride of zinc and other agents of this class. Indeed a reviewer of Dr. Goldsmith's monograph on bromine in hospital gangrene, asserts that, a saturated solution of sugar is equally efficacious if applied in the same way! So great is the trouble and pain attending the removal of the sphacelated tissue from the application of the escharotic, that it is very desirable to secure an agent, which will dissolve out the sloughs and change the action of the tissues. We have such an agent in the OIL OF TURPENTINE. We have seen the application of turpentine in several quite formidable cases of sloughing wounds, followed by the speedy solution of the gangrenous tissue and a change at once quick and decided in the surrounding structures.

Dr. B. related some cases to illustrate these principles, one of which we quote:—

CASE I.—Wm. Ambrosher, private Co. C, 49th Regiment O. V. I., aged 25 years, was wounded on the 27th of May, 1864, near Dallas, Ga., with a musket ball in lumbar region, posteriorly, right over spinal column. Admitted July 1st, 1864. Patient in a scorbutic and very anæmic condition, has bed-sores over nearly every bone, that comes in contact with the bed, as over the crests of ilia and trochanters of femurs. The wound made by the ball is surrounded by considerable inflammation. Three days after admittance, some necrosed bone of the spinous processes of the vertebra, which had been touched by the ball, were removed and two days after this the patient had much fever, parts around the wound became much more inflamed and considerable swelling took place, an abscess formed, the contents of which made their exit through a fissure, running from the abscess to the posterior surface of left thigh. A large sloughing ulcer of four inches in diameter took the place of the abscess and wound, at the same time sloughing also commenced in the bed-sores.

By order of Dr. Bartholow, poultices of yeast and charcoal were applied to the inflamed surface and to the ulcers, the oil of turpentine twice per day, by means of a piece of lint shaped exactly like the surface of the ulcers, and saturated with turpentine; the borders of ulcers were protected with sweet oil. The turpentine arrested the sloughing, appeared to dissolve the slough and detach it from the healthy tissue. After the fourth application granulations were seen on the whole surface of ulcers, turpentine was then discontinued, and equal parts of alcohol and water substituted as a dressing. The fissure was injected with a solution of permanganate of potassa; this soon healed it; excessive granulation was controlled with a solution of nitrate of silver (40 grs. to ℥i of water); quinine, a good diet and a bottle of porter every day were given. Patient is nearly well now.—*The Cincinnati Lancet and Observer*, Oct. 1864.

Sixty-six Cases of Lithotomy.—Prof. C. A. POPE. publishes (*St. Louis Med. and Surg. Jour.*, Sept. and Oct. 1864) a table of sixty-six cases of lithotomy, with eighty-six calculi removed. His method has been generally the single lateral, which has usually sufficed for the removal of the calculi. In but three instances in the male, he found it necessary to resort to the bilateral method. In females, on the contrary, he resorted to it exclusively, directing the incisions upward and outward. In but one instance, he says, has he been compelled to perform the high or supra-pubic operation. In that patient, a young man 22 years old, the stone had existed from infancy, and was very large. Even this opening did not suffice for the removal of the foreign body, as it was firmly impacted in the bones, filling the whole pelvis. "I was compelled to make the lower section also, and being thus enabled to quarry, as it were, through and through, I succeeded in extracting by piecemeal the whole mass. The fragments saved weighed three ounces, five and a half drachms, with quite as large a quantity of sand, which could not be collected, and was lost. The case was regarded as extremely unfavourable, but an operation affording the only hope of life, it was willingly accepted. The patient sank, on the third day, from the shock of the operation, reaction not having taken place.

"One patient was operated on by the high and low methods at the same time, on account of a very large stone, while but one other required secondary lithotomy. For a year after the first operation, he was entirely free from all symptoms of stone. Three years subsequently I removed from him three other calculi, which, although of the same chemical constitution as the first, have a very different appearance, and are much harder.

"With the exception of the first two cases, in which I used the single lithotome cacheé of Frère Côme, I have operated altogether with the simple scalpel. It is unquestionably, I think, the simplest and best instrument.

"It has not been my custom to institute any special preparatory treatment of my patients for the operation. When there was any marked fever, or other untoward symptom, I would of course delay for a few days; but in nearly every case, I have seen the patient one day and operated the next. The best and speediest way to give relief is to remove the source of trouble. Prior to the operation, as is usual, I order a dose of castor oil over night, to clear the bowel, and, at the time of its performance, always introduce the finger into the rectum, with the double object of assuring myself of its being empty, and of provoking it to contraction, so as to be as far as possible out of the way of the knife. When the staff is reached in the perineum, the assistant who holds it, hooks it well up under the arch of the pubes, in order to afford more space for the operator between it and the posterior wall of the urethra, and to draw the parts away from the rectum.

"In no case have I had serious hemorrhage attending the operation, and never applied a ligature but in one instance. In one patient there was a troublesome secondary hemorrhage on the ninth day, in consequence of the extraction of a very large stone, causing ulceration of the wound, which extended into the rectum, the bleeding being from the bowel.

"In but a single instance was there a wound of the rectum, and this was not made by the knife, but resulted from a slight tear in the extraction of a very rough and jagged mulberry calculus. The patient was restless, and the stone was not evenly seized by the forceps. A small recto-vesical fistula continued for some time, but finally closed.

"In three cases only was there union of the wound by the first intention—one in a child of 5 years; the second in a physician 49 years of age, in whom the water ceased to escape by the wound in two hours after the operation. In the third case, an Irishman, thinking himself well, walked two miles on the third day succeeding the cut—no harm whatever ensuing.

"Of the sixty-six cases, there was but one occurring in the negro race. This fact would seem to confirm the prevalent idea, that this race is much less subject to calculous disease than the white.

"Although a subject of inquiry, I have not found that the kind of water used by the patients had much influence in determining the formation of calculus. It has seemed to result quite as often from the exclusive use of rain water as of that from wells or fountains.

"The extreme ages of my patients have been eighteen months for the youngest, and sixty years for the eldest.

"The mortality has been four out of the sixty-six cases, or one in sixteen and a half. This good result is not claimed to be owing to any peculiar skill in operating, but is attributable rather to the favourable ages of my patients. A large majority of these were children, in whom death, after lithotomy, is the exception."

In four cases, foreign bodies formed the nuclei of the calculi, as previously known—sections of the others not having been made for further research in this respect. In one case the foreign body came from within, being a sequestrum from the acetabulum, the result of morbus coxarius. In three cases, the foreign bodies came from without. These were, respectively, given in the notes to the table. In the case of the darning needle, the little patient, then only eight years old, did not introduce it through any lasciviousness; but amusing himself with a playfellow in throwing streams of urine upon each other, he inserted the needle with the idea of sticking his antagonist with it, as a sort of elongated shot from his water battery. Contrary to his expectations, it passed backwards instead of forward. Although suffering intensely for years, he did not, through fear or shame, reveal the cause until a short time previous to the operation.

The chemical composition of the calculi has been inferred from their physical characters only, an accurate analysis and report of the same being reserved for a future contribution promised by Professor A. Litton.

HARVARD UNIVERSITY.

SUMMER SESSION OF THE MEDICAL DEPARTMENT.

The Annual Course of Summer Instruction in the Medical Department of Harvard University will commence at the Massachusetts Medical College, in North Grove Street, Boston, on Monday, March 13, 1865, and continue till November.

Clinical, Medical and Surgical Instruction will be given at the Massachusetts General Hospital, adjoining the College.

Recitations from approved text-books will be held daily during the session at the College, upon all branches necessary to a medical education. Occasional lectures are also given, and demonstrations, illustrated by the Museums of the College.

During the Summer Session, instruction is given by lectures at Cambridge, on Botany, by Prof. Gray; on Comparative Anatomy, by Prof. Wyman; on Zoology, by Prof. Agassiz; on Acoustics and Optics, by Prof. Lovering. To these lectures, students of the Summer Session will be admitted without extra charge.

Good Board can be obtained at $4 50 or $6 00 per week.

Fees for the Summer Term (which must be paid in advance), $100, without extra charge for Matriculation, Hospital, Library or Dissections; for six months, $100; for three months, $50.

D. Humphreys Storer, M. D.,	Professor of Obstetrics and Medical Jurisprudence.
John B. S. Jackson, M. D.,	Professor of Morbid Anatomy.
Henry I. Bowditch, M. D.,	Professor of Clinical Medicine.
Calvin Ellis, M. D.,	Adjunct Professor of Clinical Medicine.
Oliver W. Holmes, M. D.,	Professor of Anatomy and Physiology.
George C. Shattuck, M. D.,	Hersey Professor of the Theory and Practice of Medicine.
Henry J. Bigelow, M. D.,	Professor of Surgery and Clinical Surgery.
John Bacon, M. D.,	Professor of Chemistry.
Edward H. Clarke, M. D.,	Professor of Materia Medica.

David W. Cheever, M. D., Demonstrator.
Wm. E. Coale, M. D., Assistant in Theory and Practice.
Samuel L. Abbot, M. D., Assistant in Clinical Medicine.
Fitch E. Oliver, M. D., Assistant in Materia Medica.
Francis Minot, M. D., Assistant in Theory and Practice.
Richard M. Hodges, M. D., Assistant in Surgery.
Horatio R. Storer, M. D., Assistant in Obstetrics.
J. Nelson Borland, M. D., Assistant in Clinical Medicine.
James C. White, M. D., Assistant in Chemistry.

Tickets to the Session must be procured before students will be admitted to the Course.

GEORGE C. SHATTUCK, Dean of the Faculty,
No. 2 Staniford Street, Boston.

Circulars can be obtained gratis, upon application to David Clapp & Son, Medical and Surgical Journal Office, over 334 Washington Street, Boston. Jan. 1st, 1865.

[Jan. and April.]

LONG ISLAND COLLEGE HOSPITAL, BROOKLYN, N. Y.

The Session for 1865 will begin on Thursday, March 2d, and end in July.

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Darwin G. Eaton, M. D., Prof. of Chemistry and Toxicology.
William Gilfillan, M. D., Prof. of Materia Medica and Therapeutics.
S. Fleet Speir, M. D., Demonstrator of Anatomy.
Robert Newman, M D., Prosector to Prof. of Surgery.

Fees.—Full Course, $100; Matriculation fee, $3; Demonstrator's fee, $5; Graduation fee, $25; Hospital ticket, gratuitous.

Good board, with lodging, &c., may be obtained in the vicinity of the College, for from $4 to $5 per week.

Letters addressed to any Member of the Council will receive attention.

THE
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TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. Lidell, Waggoner, Fell, Caswell, and Pooley, which shall receive early attention.

We would earnestly urge upon our contributors the importance of forwarding to us their communications early. Papers intended for the original department should be on hand at least six weeks, and Reviews one month, before the date of publication. To put in type and print off each number of this journal requires more time than seems to be supposed.

All articles intended for the *Original* Department of this journal must be communicated to it *exclusively*.

The following works have been received:—

Lectures on Epilepsy, Pain. Paralysis, and certain other Disorders of the Nervous System, delivered at the Royal College of Physicians in London. By Charles Bland Radcliffe, M. D., F.R.C.P., &c. &c. London: John Churchill & Sons, 1864. (From Dr. Brown-Séquard.)

The Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Second Series, Vol. 29. London, 1864. (From the Society.)

Medical Errors. Fallacies connected with the Application of the Inductive Method of Reasoning to the Science of Medicine. By A. W. Barclay, M. D., Cantab. and Edin. London: John Churchill & Sons, 1864. (From the Publishers.)

The Student's Book of Cutaneous Medicine and Diseases of the Skin. By Erasmus Wilson, F.R.S. London: John Churchill & Sons, 1864. (From the Publishers.)

The Successful Treatment of Internal Aneurism. Illustrated by Cases. By Jolliffe Tufnell, F. R. C. S. I., &c. &c. London and Dublin, 1864. (From the Author.)

Entoptics. Letter to Dr. Jago from Dr. Mackenzie. Glasgow, 1864. (From the Author.)

On the Relations, Structure, and Function of the Valves of the Vascular System in Vertebrata. By James Bell Pettigrew, M. D., Edin., Ass. in Mus. of Royal College Surg. of England, &c. &c. &c. Reprinted from the Transactions of the Royal Society of Edinburgh, Vol. XXIII., Pl. III. Edinburgh, 1864. (From the Author.)

The Presumption of Survivorship. By James Bell Pettigrew, M. D., Edin., &c. &c. Reprinted from the British and Foreign Med.-Chir. Review, January, 1865. London, 1865. (From the Author.)

Medical Lexicon. A Dictionary of Medical Science: containing a concise explanation of the various subjects and terms of Anatomy, Physiology, Pathology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Obstetrics, Medical Jurisprudence, and Dentistry; Notices of Climate and of Mineral Waters; Formulæ for Officinal. Empirical, and Dietetic Preparations; with the Accentuation and Etymology of the Terms, and the French and other Synonyms; so as to constitute a French as well as English Medical Lexicon. By ROBLEY DUNGLISON, M. D., LL. D., Professor of the Institutes of Medicine, etc., in the Jefferson Medical College of Philadelphia. Thoroughly Revised and very greatly Modified and Augmented. Philadelphia: Blanchard & Lea, 1865. (From the Publishers.)

Consumption: its Early and Remediable Stages. By EDWARD SMITH, M. D., LL. B., F. R. S., &c. &c. Philadelphia: Blanchard & Lea, 1865. (From the Publishers.)

A Treatise on Military Surgery and Hygiene. By FRANK HASTINGS HAMILTON, M. D., Late Lt.-Col. Med. Inspector U. S. A., Prof. Military Surg. and Hygiene and of Fractures and Dislocations in Bellevue Med. Col., &c. &c. &c. Illustrated by 127 engravings. New York: Baillière Bros., 1865. (From the Publishers.)

A Monograph on Glycerin and its Uses. By HENRY HARTSHORNE, A. M., M. D., M. A. P. S., F. C. P. P., &c. &c. Philadelphia: J. B. Lippincott & Co., 1865. (From the Publishers.)

Lectures on Surgical Pathology, delivered at the Royal College of Surgeons of England. By JAMES PAGET, F. R. S., Surgeon extraordinary to her Majesty the Queen, &c. &c. &c.. Revised and Edited by WM. TURNER, M. B., Lond. F. R. C. S. E., &c. &c. Third American Edition. Philadelphia: Lindsay & Blakiston, 1865. (From the Publishers.)

The Transactions of the American Medical Association. Instituted 1847. Vol. XV. Philadelphia, 1865.

Extracts from the Records of the Boston Society for Medical Improvement, with Papers read before the Society. By FRANCIS MINOT, M. D., Secretary of the Society. Boston, 1865. (From the Society.)

Fourteenth Anniversary Meeting of the Illinois State Medical Society, held in Chicago, in May, 1864. Chicago, 1864.

Proceedings of the Academy of Natural Sciences of Philadelphia, November and December, 1864.

Report of the Pennsylvania Hospital for the Insane for the year 1864. By THOMAS S. KIRKBRIDE, M. D., Physician in Chief and Superintendent. Philadelphia, 1865. (From the Author.)

Annual Report of the Surgeon-General for the year 1864, made to the Governor of the State of Ohio. Columbus, 1865.

Report of the Board of Health to the Mayor and City Council of Baltimore. Baltimore, 1865.

Report of the General Superintendent of the Philadelphia Branch of the U. S. Sanitary Commission to the Executive Committee, January 1, 1865. Philadelphia, 1865.

Report of the Operations of the U. S. Sanitary Commission in the Valley of the Mississippi for the Quarter ending October 1, 1864. By Dr. J. S. NEWBERRY, Secretary Western Department.

Eleventh Report of the Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the year ending Dec. 31, 1863. By JOHN BARTLETT, Secretary of State. Providence, 1865.

Ozone: its Relations to Health and Disease. An Essay which received the Fiske-Fund Premium of the Rhode Island Medical Society, June, 1861. By E. S. Gailliard, M. D., of Baltimore, Md. (From the Author.)

Gun-Shot Injuries of the Knee Joint requiring Amputation. By A. B. Crosby, A. M., M. D., Associate Professor of Surgery, &c., Dartmouth College, formerly Brigade Surgeon U. S. A., read before the State Medical Society of New Hampshire, at Manchester, June, 1864. Concord, 1864. (From the Author.)

Ovarian Tumours and their Treatment (excepting Ovariotomy). By E. R. Peaslee, M. D. New York, 1864. (From the Author.)

Ovariotomy: a Paper read before the New York Academy of Medicine, June 15, 1864. By E. R. Peaslee, M. D. New York, 1865. (From the Author.)

Shakspeare's Medical Knowledge. By Charles W. Stearns, M. D. New York: D. Appleton & Co., 1865. (From the Author.)

Prize Essay. On the Pathology of Jaundice. By S. Fleet Speir, M. D. Philadelphia, 1865. (From the Author.)

History of a Case of Partial Reconstruction of the Face. By Gurdon Buck, M. D. Albany, 1864. (From the Author.)

Address delivered before the American Medical Association by Alden March, President of the Association. Philadelphia, 1864.

Medical Life in Retrospect. The Annual Address to the Candidates for Degrees in the Medical Institution of Yale College, January 12, 1865. By Isaac G. Porter, M. D., New London, Conn. New Haven, 1865.

The following Journals have been received in exchange:—

The British and Foreign Medico-Chirurgical Review. January, 1865.

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THE

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OF THE MEDICAL SCIENCES

FOR APRIL 1865.

Art. I.—*An Account of Four Cases of Gunshot Wounds, Involving Bone and Implicating the Knee-Joint, treated by Free Incisions into the Joint, with Comments.* By John A. Lidell, M. D., Surgeon U. S. Volunteers.

Guthrie says, that "wounds of the knee-joint from musket-balls, with fracture of the bones composing it, require immediate amputation." Vide *Commentaries on the Surgery of War*, p. 94, American edition.

Esmarch says, that "all gunshot injuries of the knee-joint, in which the epiphysis of the femur or tibia has been affected, demand immediate amputation of the thigh. It is a rule of deplorable necessity, already given by the best authorities, and which experience fully confirms. In vain have we often made the attempt to leave the case to nature, to save an unhappy man the loss of his limb, on account of a slight injury; but just so often have we had cause to repent that amputation had not been performed in the first instance." *Statham's Esmarch*, p. 107, American edition.

But the mortality attending secondary amputation of the thigh, especially for gunshot injury of the osseous tissue entering into the structure of the femoro-tibial articulation, is very great. A large majority of the cases treated in this way terminate fatally. For this reason, among others, it has been proposed to try another operative procedure in these cases, when for any cause primary amputation has not been practised, with a view to diminish the risk of a fatal termination, and, at the same time, to save the limb, if such a consummation be perchance within the limits of possibility. The operative procedure to which the writer refers, consists in opening the wounded and inflamed joint by incisions made to such an extent, and in such a manner, that any accumulation or stagnation of decomposing and ichorous pus in the joint cavity shall be impossible.

The conservative surgeon might be induced to give a fair trial to this method of treating gunshot wounds of the knee-joint, complicated with injury of the femoral condyles or the head of the tibia—primary amputation having not been performed, and the secondary period having arrived—for two very good reasons: *Firstly*, clinical observation has shown that those cases of gunshot wound of the knee-joint do the best, when left to nature, wherein the joint happens to have been opened extensively by the projectile; and *secondly*, the success which has attended the treatment of suppurative idiopathic synovitis by free incisions, as recommended and practised by Mr. Gay, Mr. Barwell, and others. Their idea, the correctness of which is not questioned by anybody at present, is that a suppurating joint has lost its physiological characteristics as an articulation and has become, to all intents and purposes, an abscess; and, as such, will be benefited by the plan of treatment found useful for accumulations of matter in the dense tissues of other portions of the body, viz., free incisions. It has been suggested that one cause of the great amount of constitutional disturbance which always accompanies suppurative inflammation of any of the large joint-cavities, is the confinement of the pus within the dense, unyielding fibrous and osseous walls of the joint; and hence great benefit is always derived in such cases from letting the matter out.

But to return to our starting point. Stromeyer, in at least one instance, practised the kind of experimental surgery which we have under consideration. He says:—

> "As experience has taught that those wounds of the joint (knee) in which it had been extensively opened have been the most inclined to terminate favourably, amputation not having been practised, I was led, on account of the frequent fatal termination of amputation of the thigh, to make the following attempt: In the case of a young man, a musket-ball had struck the joint near the patella externally, and made its exit three inches backward and upward, comminuting a portion of the outer condyle or rather deeply grooving it. At first it was doubtful whether the joint was opened; when this became certain, I laid open the track of the bullet, removed many small fragments, and made on each side of the joint an incision two inches in length through the soft parts and the lateral ligaments. From these openings the puriform synovia readily escaped, and the condition of the patient was for some weeks everything that could be wished. The suppuration decreased in a short time and the wounds had a healthy appearance, but the patient died of abscesses in the lungs." *Statham's Stromeyer*, p. 65, American edition.

Before introducing the following cases, it should be remarked that three out of the four plainly demanded primary amputation, in the opinion of the writer; that none of them reached a general hospital until the secondary period had arrived, and that secondary amputation did not promise a successful result in a single one of them, on account of the extension of the inflammatory mischief up the thigh, in a severe form, in all of them. It remained, therefore, at our option either to leave these cases to the resources of nature alone, or to treat them by free incisions made into the inflamed and injured joint.

CASE I. *Gunshot wound of the left knee-joint, with fracture of the patella; treated by free incision; fatal from diarrhœa and exhaustion.*— Corporal George W. Moser, Co. B, 51st Pennsylvania Volunteers, aged 34 years, was admitted to Stanton General Hospital, 25th May, 1864, from the field, having sustained a gunshot wound of the left knee-joint thirteen days previously (12th May), near Spottsylvania C. H., Va. A conical musket-ball passed through the fore-part of that joint from side to side, fracturing the patella with comminution, but not injuring the condyles of the femur, or the head of the tibia.

The knee was much swelled and inflamed when he came to the hospital. The thigh, also, was a good deal swelled. The wounds of entrance and exit were both open and discharging a thin, dark-coloured, dirty-looking pus. He had much constitutional disturbance; a hot skin, a feeble and rapid pulse, much general debility, and diarrhœa. He was gradually getting worse. It was thought that he did not possess sufficient stamina to undergo an amputation of the thigh with success. Besides, it happened at this time that all secondary amputations turned out very badly. For these reasons the following operation was performed:—

June 2, 1864. The patient being under sulphuric ether, a longitudinal incision was made on the outer side of the joint extending from the head of the tibia nearly to the top of the external sub-crural pouch, and exposing the interior of the joint to that extent. The fragments of the broken patella, three in number, were then extracted. The operation was attended with the loss of but little blood, and with the advent of but little shock. A straight splint, well padded, was applied to the inner side of the limb in such a manner as to secure complete immobility of the joint. The ice dressing was ordered to be kept on the knee, and the interior of the joint to be washed out at short intervals by an injection consisting of a weak solution of the permanganate of potassa. It was also directed that he should be supported by a nutritious diet, assisted by tonics (ferri et potass tart.), and by stimulants (porter and wine). The next day after the operation he appeared to be much better in every respect, and for several days afterwards he appeared to be doing well. The wound of operation took on a healthy action, and began to granulate in a satisfactory manner. The improvement was so marked in every respect that we began to entertain some hopes of his recovery.

8*th*. It was noticed that he was failing in strength, notwithstanding the supporting treatment. He also had much diarrhœa. After this he continued to grow weaker day by day, emaciating all the while, until he died, 12th June, ten days after the operation, of exhaustion. He was entirely free from pain, and towards the last was somnolent, but his intellect was always found to be clear on rousing him. The wound of operation continued to do well to the end.

The profuse and persistent diarrhœa appeared to be one of the chief causes of the debility and marasmus which exhausted and finally destroyed this patient. At times there was a remission of the diarrhœa, and it was observed that he always appeared to be better at such intervals. The discharges from the bowels became very profuse towards the last. But, as already intimated, the wound of operation continued to secrete a laudable pus and to fill up with healthy-looking granulations, notwithstanding that he was growing weaker and thinner from one day to another.

We failed to obtain an autopsy because the patient's brother was present and took possession of the body immediately after death. In all probability a *post-mortem* examination of the intestinal canal would have revealed the exact relation which existed between the diarrhœa and the fatal result, and, on that account, it is a subject of regret that an autopsy was not held. The patient himself informed us that he had diarrhœa for some time before he was wounded, and that it had never entirely left him since that event.

CASE II. *Gunshot wound of the left knee-joint, with very oblique fracture within the lower third of the femur, treated by free incisions into the joint; death by exhaustion five days afterwards.*—Private Benjamin Wise, Co. I, 170th New York Volunteers, aged 28 years, was admitted to Stanton General Hospital, June 4, 1864, from the field, having been severely wounded, ten days previously (May 25), in the left knee-joint, with a very oblique fracture of the femur, just above the condyles, by small-arms, on the North Anna River. A rifle-bullet (conical) penetrated the joint from the front, a little above and to the outer side of the patella, and, passing obliquely backwards and upwards, escaped behind. The line of fracture extended from the external condyle across the femur, so as to terminate on the inner side, some five or six inches above.

The knee was very much swelled when the patient was brought to the hospital. It was also hot, tender, and painful. On compressing it, a thin, dirty-brown-coloured pus escaped from both the orifices of entrance and exit. The thigh likewise was much swelled, up to the hip. The subcutaneous veins were large and blue-coloured; they could be distinctly traced all the way up to the groin. When admitted to the hospital, he did not have much constitutional disturbance; but the thigh was already too much swelled and infiltrated with the products of inflammatory action to admit of successful amputation at this time. Moreover, the results of secondary amputations were proving to be very unfavourable, even in cases that seemed to be favourable at the outset. Prescribed absolute quietude of the limb, nutrients and opiates *pro rè nata*, and the ice dressing to the inflamed joint. But little change in his condition occurred for several days.

June 8. About midnight he took a severe chill, which lasted half an hour. He became feverish afterwards, and the pain in the joint was increased.

9th (*morning*). He is much worse. He has a good deal of irritative fever, which has supervened since yesterday; countenance anxious; skin hot; pulse 108, and quick. He also complains of an intense aching pain in the joint. His constitution appears to be unusually vigourous, but the thigh is so much swelled and inflamed as not to justify amputation through it. Accordingly the following operation was performed as a remedial measure of dernier resort:—

The cavity of the joint was freely opened by two longitudinal incisions, each rather more than four inches in length, and made through the internal and external lateral ligaments respectively. Several small pieces of bone were extracted through the incision on the outer side of the joint. It was noticed that the peri-articular tissues of the affected knee were greatly thickened by serous infiltration. Sulphuric ether was employed as an anæsthetic. But little blood was shed, and no "shock" was occasioned by the operation. The joint contained a quantity of dark-coloured, dirty-looking matter. Directed suitable extension of the limb to be made by a weight attached to the leg through the agency of adhesive plasters, and a cord passing through a hole in an upright standard firmly fastened to the foot of the bed. Thus the weight was suspended beyond the foot of the bed. Directed the limb to be propped up by long sand-bags placed on each side of it so as to keep it steady; ice dressings to the joint to be continued.

10th. He expresses himself as entirely relieved from pain, and he has no fever. Ordered supporting treatment (nutrients and tonics), together with the ice dressing to knee. He appeared to be getting on comfortably in every respect till June 13, when it was noticed that he was failing rapidly, although the joint appeared to be doing well, and the swelling of the thigh was manifestly abating. Ordered free stimulation and alcoholics.

14th. He continued to sink, and died in the afternoon, of exhaustion. No autopsy.

The relief to the patient afforded by this operation, with respect to both the intense distress in the injured knee and the symptoms at large of irritative fever, was prompt, decided, and very striking; and while the operation did not rescue the patient from death, nor even prolong his days to any extent worth mentioning, it must be acknowledged, at the same time, that it produced greater relief from intense suffering than the writer has ever seen produced in similar cases by any other remedial measure whatever, except amputation of the thigh. This operation, then, performed in a case which did not admit of secondary amputation, was beneficial, because of the great comfort which it afforded the patient. However, this interesting fact should not incline us to forget that primary amputation ought to have been practised in this case as soon as possible after the injury.

CASE III. *Contusion of the external condyle of the left femur by a glancing bullet: secondary inflammation of the knee-joint treated by free incisions; termination fatal.*—Private Thomas Pryor, Co. H, 18th Massachusetts Volunteers, aged 19 years, was admitted to Stanton General Hospital, May 25, 1864, from the field, having been wounded at the battle of the Wilderness, Va., May 5, twenty days before, by a glancing minie ball, which caused a superficial wound of the skin and subcutaneous areolar tissue on the outer side of the left knee; the joint was not opened by the bullet.

At the time of his admission to hospital the knee was swelled, painful, and tender. The wound was about the size of a franc piece. The tissues at the wound were ashy-gray in colour, and sloughing. A very small opening into the joint, about the size of a pin-head, had been made by the slough, from which a thin flaky pus could be squeezed out. The leg was flexed on the thigh to about a right angle. The tenderness of the joint was very great.

The general condition of the patient was very bad. His countenance exhibited a dusky-red colour; skin hot and dry; pulse quick, small, and very frequent (130); he was weak, delirious, and had muscular tremors (subsultus tendinum); tongue dry, and of a bright-red colour. He was thought to be in too low a condition to bear amputation, and, under the peculiar circumstances of the case, it was deemed advisable to perform the following operation:—

June 6, 1864. The inflamed knee-joint was freely opened by two longitudinal incisions, each about three inches in length, and made, the one on the inner and the other on the outer side of it; the lateral ligaments were then divided subcutaneously with a tenotome. A quantity of thin flaky pus escaped. The synovial membrane was found to be red and thickened, especially in the subcrural pouches. The loss of blood during the operation was trifling, and there was no "shock." The anæsthetic employed was sulphuric ether.

After-treatment.—The leg was brought down straight immediately, and secured by roller bandages to a straight splint well padded and placed behind the articulation, so as to extend from the ischial tuberosity to the heel and beyond it. The ice dressing was continued on the knee, and nutrients, tonics, and stimulants were administered internally.

June 8. He appeared much better. His pulse was about 108; skin cool, soft, and moist; tongue moist and clean; his delirium had departed, his countenance was clear and cheerful, and he expressed himself as free from pain; but he had no appetite.

10*th*. He was failing rapidly, and he died on that day, of exhaustion.

From the great severity of the constitutional disturbance, the presence of idiopathic fever had been suspected; but, at the autopsy, it was found that there was not any lesion whatever of the intestines and of the mesenteric glands, that the liver was not bronzed, and that the spleen was not enlarged or softened. The febrile movement was therefore, in all probability, neither idiopathic nor malarial, but purely sympathetic of the mischief in the knee-joint. It was also found at the autopsy that the *external condyle* of the femur was *contused by the glancing bullet*, although the synovial sac was not penetrated by it. The *contused bone exhibited well-marked ecchymosis* through a circular space about one inch in diameter by three-fourths of an inch in depth, and was surrounded by a distinct line of demarcation, which was beautifully shown by making a section through it with a saw. The contused portion of bone exhibited a dark reddish-brown colour. The interior structure of the epiphysis in general was redder than natural. The femoral condyles were not denuded of cartilage. The lungs exhibited pneumonia in the first stage (active hyperæmia). There was no thrombus in any of the veins, and no abscesses in any of the organs.

The relief from prominent and urgent symptoms was produced as promptly and as strikingly in this as in the last case; but, in both alike, the operation appeared to be of no avail to rescue the patient from impending death. The subject of *contusion of bone*, which is introduced by this case, is very interesting. It is, however, foreign to our present inquiry, and, besides, would require more time than can now be bestowed, in order to make a satisfactory exposition of it.

CASE IV. *Gunshot wound, with fracture of the left femur in the lower third, implicating the knee-joint; treated by free incisions; death by exhaustion.*—Private John A. Mackey, Co. A, 7th New York Heavy Artillery, aged 21, was admitted to Stanton General Hospital, 4th June, 1864, from the field, having a gunshot wound, with fracture of the left femur, in lower third close to knee-joint, inflicted 30th May, 1864, at Gaines' Hill, Va., by a conical bullet (musket), which entered the front of the thigh, just above the sub-crural synovial pouch, and, passing through the limb backwards and slightly upwards, escaped behind. The femur was fractured obliquely in its lower third, but the amount of comminution appeared to be not great.

The left knee was greatly swelled, painful, and very tender, on careful examination, at time of admission to hospital. The thigh, also, was much swelled as high as the hip and groin. A thin, dirty-looking pus flowed from the wounds. The track of the bullet was emphysematous. On compressing the knee-joint the flow of this illy-elaborated matter was increased. The cavity of the joint had probably been opened by the lower end of the upper fragment of the broken femur.

The patient's general condition was very bad. His countenance was pale, pinched, and almost hippocratic; tongue inclined to be dry; pulse weak and very frequent (about 140). He was daily becoming more debilitated. It was obvious that he could not bear amputation, even if the tissues of the thigh were sound enough to permit that operation. It was equally obvious that he must speedily succumb to his injuries unless art should interfere successfully in his behalf. Accordingly, the following operation was employed as a remedy of last resort:—

June 8, 1864. The injured knee-joint was laid freely open by two longitudinal incisions three or four inches in length, and made directly over the external and internal lateral ligaments respectively, so that any subsequent accumulation of matter in the cavity of the joint became impossible. A detached fragment of bone, about one inch in length, was extracted through the incision on the outer side of the joint. The patient was insensible from sulphuric ether. The joint contained some thin, dark-coloured, dirty-looking pus. The loss of blood was trifling. There was no "shock." Directed the leg to be kept extended by a weight attached to it by means of adhesive plasters, etc., and suspended over the foot of the bed. Ordered the ice dressing to be kept on the knee, and nutrients and alcoholic stimulants to be administered as freely as he would take them.

9th. He expressed himself as feeling more comfortable, but was in reality no better.

10th. He was rather weaker, but free from pain.

11th. He died from exhaustion.

At the autopsy the femur was found to be fractured, with much comminution, about four and one-half inches above the femoro-tibial articulation. The lower end of the upper fragment (shaft) was *denuded of periosteum and gangrenous to the extent of about two inches.* Here the *compact tissue* was *white*, and the *marrow dirty, grayish-brown in colour*, and *very offensive in odour. Above the gangrenous section the marrow was bright-red in colour* (*red inflammatory marrow of Virchow*). The upper end of the lower fragment (epiphysis) was also *gangrenous*, but not to the same extent. There was *no thrombosis*. There were *no secondary abscesses* in any part of the body.

The autopsy of this case proves that extensive comminution of the femur may sometimes exist, in connection with a gunshot fracture of that bone; and, at the same time, the surgeon be unable to detect the extent of the comminution, however careful his exploration of the wound with his finger. In such cases it will often be found that the osseous fragments are lying in close proximity to each other, their original relations having been but little disturbed, and that they are firmly held in such relationship by the fibrous and other strong tissues situated immediately exterior to them.

Conclusions.—It may be stated, in a general way, that the result of the cases narrated in this paper is not calculated to encourage the practice of treating wounds of the knee-joint, complicated with injury of the neighbouring osseous tissue, by the method of incisions, for not one of them eventuated in recovery. Indeed, all of them terminated in death by exhaustion within a comparatively short time after the operation; and there was also a remarkable uniformity in the phenomena pertaining to their fatal close. In all of them the first effect of the incisions into the joint appeared to be highly beneficial, being attended with marked relief from the local pain and with marked diminution of the constitutional disturbance or irritative fever. But in no case was this improvement permanent; for, after an interval of time which appeared to depend somewhat upon the severity of the injury to bone, but it was generally brief, symptoms of extreme debility supervened in every one of them, and death by exhaustion followed soon afterwards, in spite of the liberal use of alcoholic stimulants and the liberal employment of the supporting treatment.

With regard to Case I. there is, in the opinion of the writer, ample room for doubt whether this patient would have recovered under any plan of treatment whatever that could have been employed. This opinion is predicated upon the persistence and the severity of the diarrhœa which had attacked the patient prior to the infliction of the gunshot wound of the knee-joint and patella, and afterwards accompanied that injury to the fatal close. It is certain that he was steadily progressing downwards from bad to worse while the cure of his injury was left to nature, that he died subsequently, having been treated by incisions, and it is extremely difficult to conceive how primary amputation of the thigh could have placed him in a better condition to resist the exhausting effects of the disease of his chylopoietic viscera.

With regard to Cases II. and IV., both of which were instances of gunshot fracture of the femur in its lower third, complicated with injury of the knee-joint, it is not probable that any method of treatment less thorough than amputation of the thigh could have prevented a fatal termination; and, in the opinion of the writer, there is no doubt but that operation ought to have been practised at the outset. In both these instances the result shows that amputation should not have been deferred beyond the primary period. Early amputation would have afforded these patients the following advantages: First, that pertaining to the primary operation, which is, in general, more successful than the secondary operation in the ratio of about two to one; and in the second place immediate amputation would not have left them exposed to a sudden kindling up of inflammation in the injured thigh so intense and wide-spread that amputation could not be successfully performed after its establishment. This misfortune befell both these patients; and it is well known that the same misfortune has happened to many other patients, and is very apt to happen to all suffering from wounds of a similar character. It is, therefore, to be deeply deplored that these unfortunate soldiers were deprived of that chance of recovery which amputation of the thigh, performed during the primary period, might have afforded. I know not how other surgeons may justify themselves for delaying to amputate in these and similar cases (viz., gunshot wounds of the knee-joint, with fracture of the femur or the tibia within or near the articulation), but as for myself, in view of what the great masters in military surgery, speaking to us from the past, unite in saying upon this subject; in view of the mournful results which, according to all experience, have followed this class of injuries of the knee-joint when treated without amputation, I should not only consider myself as unjustifiable in neglecting to amputate for such injuries, but should also deem myself guilty of a criminal omission in the discharge of professional duty.

Concerning Case III. it should be remarked, that the essential features of the injury were all dependent upon the *contusion of the external condyle* of the femur, occasioned by the glancing bullet. Without entering into an extended account of the pathological facts pertaining to *contusion of bone*, it may, with propriety, be stated in this place that the contusion was severe enough to destroy the vitality of a circumscribed portion of the external condyle of the femur, that this dead bone acted as an irritant in the same way as other foreign bodies, and that by such irritation an inflammatory action was kindled in the parts surrounding it, including the knee-joint. Now, it is evident that, in order to cure this joint inflammation, it was indispensable that the focus of irritation should be removed, that the portion of bone necrosed by means of the contusing-process should be extracted or excised by surgical art; and this would have required the performance of the operation of resection of the knee-joint for its accomplishment.

The other alternative was the amputation of the suffering member. During the primary and the early part of the secondary period the choice lay between resection of the knee-joint and amputation of the thigh. It is well known that resection of the tibio-femoral articulation, for traumatic lesions especially, is one of the most fatal operations known to surgery, so fatal, indeed, that it is deemed unjustifiable in military practice. There can be no doubt, then, that amputation of the thigh seasonably performed afforded the best and about the only chance of saving this patient's life.

It may be permitted in this place to remark further, that this case illustrates an important fact of which the writer has seen many other examples, viz., the exceeding gravity of all cases of severe *contusion of bone*. Indeed, the writer is inclined to class this injury among the most formidable of those inflicted by the missiles of war. It is also a subject upon which, hitherto, but little has been written. It is, therefore, comparatively new, fresh, and important, and demands to be considered in a separate place.

January 1, 1865.

ART. II.—*Plans for Exsection of the Upper End of the Humerus, and for Amputation of the Arm and of the Thigh, with Explanations.* By DAVID PRINCE, M. D., Jacksonville, Illinois. (With 7 Wood-cuts.)

THE importance of appreciating and following the best plans for exsections and amputations cannot easily be overrated. There are three principal considerations which should control the choice of the method in exsections, viz:—

1. Facility of performance;
2. Saving of blood; and
3. Securing the best final result.

Upon the selection of a plan of operating with reference to the facility of performance and the saving of blood, the life of the patient often depends.

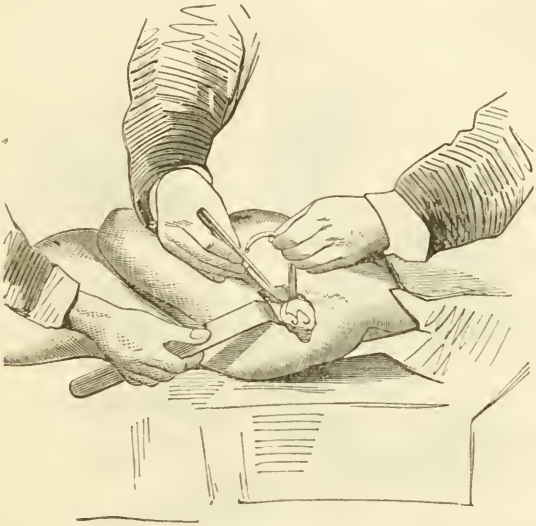
A consideration of secondary importance is the rapidity of the healing of the wound, and this will generally coincide with the choice of those plans which accord with the three principal considerations just enumerated.

I. EXSECTIONS.—It is an important element of the process of removing the upper end of the humerus, to preserve, as much as possible, the muscular and tendinous attachments to the scapula, that they may draw the upper end of the fragment up to the glenoid cavity, and render a moderately firm articulation possible. Without this, the hand is nearly useless, hanging uncontrolled by the patient's side. One of the most important parts to be saved, with reference to the best control of the member, is the long head of the biceps flexor cubiti. This tendon lies closely imbedded in its groove in the bone, and passes to the scapula through the articulation at the shoulder-joint, so that, if it can be saved, it serves not only as an element of lifting to the member beyond, but as a guide to the proper resting-place of the upper end of the fragment. In the ordinary modes of operating, it is not easy to preserve the tendon, without so denuding it of its investments as to render its sloughing probable. Not only is it desirable to preserve this tendon as well as other attachments, but to preserve as much as possible of the periosteum, as the matrix of new bony substance to enter into the reproduction of the joint. To secure these ends, the chain-saw is indispensable in any plan hitherto proposed.

The plan of freely uncovering the neck of the humerus, and passing a broad spatula under it, preparatory to the employment of a common saw, as figured in Erichsen's *Surgery*, and copied in Dr. Stephen Smith's excellent little book on *Operative Surgery*, renders the preservation of the long head of the biceps and any considerable amount of periosteum difficult, if not impracticable. When this tendon, the deltoid muscle, and portions of the bone itself, are carried away by the cause of the injury which necessitated the operation, these considerations, of course, do not apply.

Explanation of Plans.—Fig. 1. An incision is made to the bone, along the central fibres of the deltoid muscle, from its insertion in the humerus to the acromion process of the scapula, and, if necessary, the incision is carried an inch or two along the outer border of this process. With the forefinger of the left hand as a guide upon the bone, sufficient dissection is made by the knife, held in the right hand, to enable the operator to insinuate between the long head of the biceps and the bone a probe-pointed, bent, and grooved retractor, as shown in the figure. This retractor is a simplification of a more complicated instrument, to which my attention was first called by that accomplished surgeon, Dr. Charles A. Pope, of St. Louis. The instrument is made of soft iron, well polished, and for use upon the upper extremity should be about eleven inches long, so bent that the distance between the points may be eight inches. About three inches of each end is made in the form of a probe, and it is convenient to have the probe of one end larger than that of the other. The central portion is flattened, and so bent upon the flat as to make a groove upon the convex surface in the figure of a semicircle, and in diameter not more than half an inch. The probe of the retractor having been insinuated between the tendon and the bone, is carried around the bone, and brought out through the wound upon the outside, and pushed through until the grooved central part is under or behind the bone. The riding of the end of the retractor over the skin, as it comes out from under the shaft of the humerus, is facilitated by

Fig. 1.

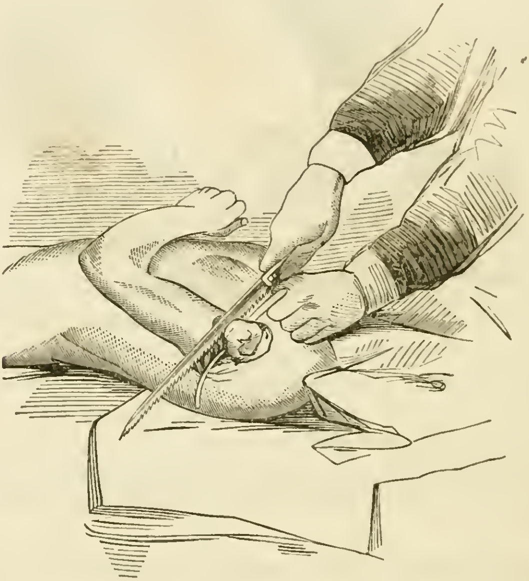


Exsection of Upper Head of Humerus.—An incision has been made along the central fibres of the deltoid, down to the bone, and the retractor is being introduced between the long head of the biceps and the bone.

holding down the skin by the fingers of an assistant, or by a spatula, as shown in the figure.

When the retractor has passed under the bone, and been turned over, it presents the appearance shown in Fig. 2.

Fig. 2.



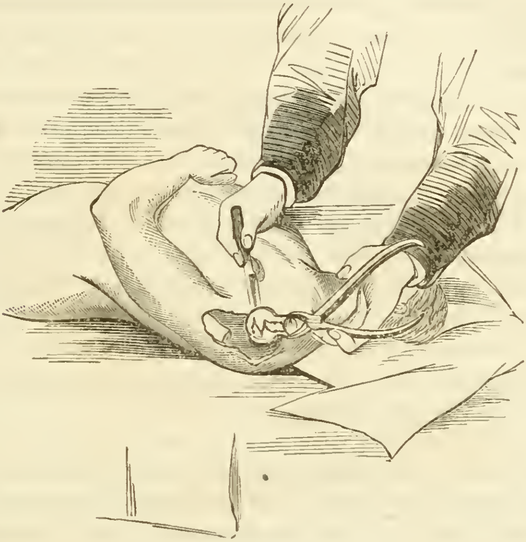
Excision of Head of Humerus.—The retractor has been passed beneath the bone, and turned over, to bring the convex grooved side up, and the saw is being applied.

Fig. 2 shows a common saw applied upon the bone, and working through without any possibility of its teeth touching the soft parts, as the retractor affords complete protection, and presents a groove for the saw to work into as it passes through the bone.

As soon as the bone is divided, it is seized by forceps applied to the lower end of the short upper fragment, and, as the bone is turned up, the periosteum is peeled off by a thick knife or chisel, and the tendon of the biceps is more completely separated from its groove between the tubercles; and in detaching the attachments of the supra-spinatus, infra-spinatus, teres minor, and subscapularis, it is advisable to cut through the bony substance, leaving scales of bone attached to the tendons. This facilitates the production of new bone, and may give these muscles power over the shaft of the humerus in its restored condition.

Fig. 3 shows the completing portion of the last of the three stages of the operation. The head of the bone is seen in the figure completely revolutionized, giving the operator free access to it with his knife for division of soft parts, and his chisel for scaling off the periosteum, carrying with it around the anatomical neck a layer of bone, the better to preserve the relations and functions of the muscles. In removing the head of the humerus for long-existing disease, much of the work of peeling off the periosteum has been done by nature, rendering the task of the operator much more easy. After the removal of the head of the humerus, the glenoid cavity of the scapula may be examined, and, if necessary, more or less of bony substance may be gnawed away with gouging forceps. The linear incised wound is then brought together, and held by sutures and strips of plaster, with reference to primary union; but the plasters should not encircle the arm, on account of the danger of obstructing the circulation in the parts beyond, if there should be much swelling; and the probability of success is somewhat increased by inserting a tube of rubber (Chassaignac's) into the upper end of the wound, to give discharge to fluids from oozing of blood or synovial secretion from the glenoid cavity; and in the absence of this, a quill, or a tube of wood, ivory, or metal may be employed, or a tent, which last should be removed within twenty-four hours. A sling should be so applied as to lift upon the elbow, to aid the deltoid, the biceps, the coraco-brachialis, and the long head of the biceps in shortening, as the upper end of the remaining shaft rises to apply to the glenoid cavity.

Fig. 3.



Exsection of Head of Humerus.—The head has been turned out with a strong pair of forceps, and the knife has detached the bicipital tendon from its groove without dividing it.

It is obvious that in this method of operating, the incised surfaces remaining after the operation are of far less magnitude than those remaining after amputation. The element of magnitude of incision in the preservation of life is on the side of exsection in preference to amputation at the upper end of the humerus. When the humeral artery and its accompanying nerves have not been so injured as to render the preservation of the limb impossible; or its attempt dangerous, from the entrance of sanious fluid into the general circulation, the attempt to save the limb should most surely be made.

The same general plan may be employed in the removal of the upper head of the femur, of the tibio-femoral articulation, or in resections of portions of the humerus and of the femur in their continuity.

In cases in which the periosteum has been separated from the bone in the course of inflammation, leaving the head of the bone in a state of necrosis, it may be broken and removed with even less disturbance of the soft parts than is implied in the introduction of the retractor under the bone.

The great advantage of the plan here explained, over that of sawing the bone with a chain-saw, is the facility of operating, with instruments of little cost, which are easily kept in order.

II. AMPUTATION OF THE HUMERUS AND OF THE FEMUR.—The contest between the methods by flaps and those by circular incisions has been going on two hundred years, since the introduction of flaps by Lowdham, and it is not yet settled.

The choice of plans of operating turns upon the facility with which, in a given case, it may be performed—upon the preservation of the vitality of the parts intended to cover the bóne—upon the saving of blood—upon the rapidity of healing, and upon the final result.

1. The flap method has the advantage of the circular, in the length of time required to perform it; but both are so short in skilful hands that this advantage is not important.

2. The preservation of the integument and subjacent tissues from mortification is a point of the greatest importance. For this purpose the capillary circulation must have a thick base. Large flaps of integument may be taken up on the face and neck, and on the upper part of the trunk, with very little underlying substance, and they may live; but upon the thigh they are very apt to die. For this purpose the muscular fascia must be preserved, whatever method is followed; and if the muscular substance, or a considerable part of it, is preserved, the chance of living is better still. The disposition of the integument to slough, when unsupported by sufficient subjacent material, was observed by Graefe, of Berlin, fifty years ago, and hence he advised to cut into the muscles in the first incision in making the circular amputation. Guthrie, the leader of British military surgery, dwells with his peculiar emphasis upon the importance of supporting the capillary

circulation by thickness of parts under the skin saved for the purpose of covering the end of the bone.

Alanson, a century ago, saw the same necessity for supporting the circulation by a sufficient supply of vessels, and hence his difficult method of circular amputation, in which the muscles are cut to the bone, in the form of a hollow cone.

In field surgery another consideration must be borne in mind, viz., that after the operation the patient is often roughly treated, being carried miles in ambulances, and sometimes in common wagons, over rough roads. McLeod, in his *Surgery of the Crimean War*, says:—

> "The circular stumps stood the transit to the rear much better than those formed by the flap method, and thus it would seem that the former mode is better adapted to military practice than the latter. The long, heavy flaps were so knocked about during the land and sea passage, that they often got loose, and ended in sloughing, while the firm, compact stumps made by the circular method were little, if at all, injured."

A favourable opportunity occurred to the writer, in the summer of 1862, to compare the results of circular and flap amputations, as practised in the Army of the Potomac. Going to Richmond in July, after the battle of Malvern Hill, and noting the condition of the amputated limbs, many cases of slough of the rim of integument were noticed, the bone protruding at the extremity of the muscular cone like a stove-pipe out of the top of a Sibley tent, while not a single case of extensive gangrene of a flap was observed. Our surgeons seem to have been governed by the maxim of Sir Astley Cooper, that muscle should not be employed to cover the end of the bone, on account of its tendency to retract, much more than by the consideration of supporting the flap by a thick base of tissue carrying blood-vessels. Hence the circular amputations that fell under my notice had generally been made by dissecting up a rim of integument outside the muscular fascia, and then cutting through the muscular substance, with more or less obliquity, to the bone. In one room in Richmond were sixteen amputated cases of the thigh and arm, eight of one and eight of the other. It so happened that half of these were circular and half flap, and there was not a circular amputation that was not more or less gangrenous, three having sloughed their rims of integument entirely; while of the flap amputations only one case presented any mortification, and that only to the extent of the size of a half dollar. One of the flap cases of the arm united entirely by primary union, except around the ligatures; and two others united in great part by adhesion. Others opened widely, with great swelling, but without gangrene. Had the circular amputations been performed without Sir A. Cooper's fear of muscle over the end of the bone, and with Guthrie's fear of gangrene for want of vascular supply, the result would have been different, but there would have been no primary union. Guthrie gets over the practical difficulty of saving material for vascular support to the integument by making, after the circular cut has been carried through the fascia, a longitudinal incision on the outer side and another on the inner side of the limb, to accelerate the retraction of the integuments with the fascia covering the muscles. After this, the second incision goes to the bone. The result is two rectangular flaps of equal length. It is suspected that some of the bad results of the rectangular flap, as introduced by Teale, in which the anterior flap is long enough to fold upon itself, while the posterior flap is short, have come from the failure to save a sufficient thickness of material under the integument to afford the necessary circulation.

3. *The Saving of Blood.*—It is always desirable that as little blood should be lost as possible, and in enfeebled conditions it is imperative. The tourniquet is the ordinary expedient. The objection to it is, that when the artery cannot be directly compressed upon a bone, its closure is imperfect, and the veins accompanying the artery are obstructed, giving rise to some degree of congestion in the limb beyond, and the blood so arrested in its central progress is of course lost in the limb as it is amputated. Samuel Cooper, in his *Surgical Dictionary*, says that Guthrie lost an officer from hemorrhage while undergoing amputation, though the tourniquet was in charge of a surgeon of ability. "In a case of this kind," says Guthrie, "the surgeon should not continue screwing at the tourniquet, but should quit it, and compress the artery at the pubes." Liston sometimes compressed the femoral or the humeral artery with one hand, while with the other hand he performed the amputation, and this, as he affirms, with the loss of much less blood than if he had relied upon a tourniquet. His common practice, however, was to employ the fingers of assistants, and not to use a tourniquet.

Guthrie's rule was: "When a surgeon has only one assistant, or several bad ones on whom he cannot rely, he should employ a tourniquet."

A convenient method of sawing the bone before dividing the great vessels would save much blood, by enabling the surgeon to restrain the flow of blood by his thumb and finger while the last cut is made, and by diminishing the time during which the open arterial mouths are exposed. It is the chief object of this paper to supply this desideratum, as explained by the illustrations further on.

4. *Rapidity of Healing.*—This depends more upon the nice adjustment of the skin and subjacent areolar tissue than upon any other single element. Muscles are not disposed to unite by *first intention*, so that their contact should be reduced to the smallest extent practicable with due regard to the circulation in the integuments. This consideration is an objection to the transfixing of the limb and cutting out for the formation of an anterior flap, because the muscles are left long, so as to be in the way of the close and easy adaptation of the integument. In the circular method, the prospect of primary union is so small as hardly to call for the use of sutures or for any nice application of plasters, except to keep the cut surfaces from

moving with painful friction upon each other. Those who operate with an intention to get union by adhesion, therefore, adopt some variety of the flap method. Another element is the avoiding of any decomposing substance between the surfaces. Animal or vegetable substances, by the fluids which they absorb, become centres of poisonous productions, from which the adjoining parts only defend themselves by suppuration and the agglutination of tissues by plastic lymph. Metallic sutures absorb nothing and give out nothing, and are therefore, in this regard, superior.

The same consideration has led to the use of metallic ligatures, but they have failed to come into much favour, because, if cut off short, they sometimes fail to imbed themselves in the tissue, and then they make abscesses, and, if left long, they are more in the way than silk or linen ligatures; and, besides, their track is a line of suppuration; pretty much negativing their theoretic advantage.

For the small and superficial vessels, Simpson's expedient of *acupressure* answers the purpose, without interfering with the continuity of coaptation of the cutaneous edges. For the deeper vessels, the metallic ligature will rarely secure union of surrounding surfaces; while, if the threads of vegetable ligatures are carried out at the point selected for the drip of fluids from the deepest portion of the wound, they cannot augment the amount of poison from decomposing material. If they are inclosed in a rubber tube, which at the same time serves for drainage, they are theoretically as well as practically harmless. Dr. Simpson has lately proposed to secure the closure of large vessels by passing through the parts alongside of the artery a common needle threaded with a fine iron wire, by which the needle is subsequently to be withdrawn. Under the ends of this needle a wire is drawn so as to compress the artery, this wire being twisted so that the pressure continues as long as the needle remains in position. This twisting is effected by seizing the head of the needle and the wire which has been passed beneath it, and rotating the needle and accompanying wire, the portion of the loop of wire at the point of the needle remaining stationary. By this means any degree of pressure may be secured. The needle is at the end of two days withdrawn by its wire, and the other wire soon after. The objection that the inner and middle coats of the artery are not cut by the pressure of the ligature is negatived by the explanation that it is the clot, and not the primary adhesion of the walls of the vessels, that secures against hemorrhage; while there may be this advantage, that the portion on the distal side of the loosely embracing ligature shrivels, instead of dying, and thus the little plug of gangrenous material is obviated. The proceeding is a little more tedious than the application of a thread of silk or linen, and, having little or no practical advantage for deep parts, and especially muscular surfaces, it will probably not come into general favour. For atheromatous or ossified arteries, however, which are cut through by the ordinary ligature drawn with its usual tightness, Simpson's expedient of acupressure may prove exceedingly valuable, rendering the old method of cauterizing such vessels unnecessary.[1]

The securing of a drain for the effusions in the deep parts of the wound is often the condition upon which union of the superficial portions is effected and maintained.

In order not to have the surfaces separated by coagula, Dupuytren advised to leave the wound open from six to ten hours, and Liston followed up this recommendation with the claim that by this proceeding adhesion is most likely to take place.

Six hours may be too long, as the parts are sometimes tightly glued by the solidifying exudations, subjecting the patient to great pain in tearing them asunder; and, besides, it is an odious proceeding to disturb a patient a few hours after a severe operation, for any purpose but to afford immediate comfort. If, in consequence of hemorrhage, the wound must be opened, the patient submits to the proceeding as one necessary to save his life; and if there is no hemorrhage, the painful proceeding is unnecessary. If the bleeding is very slight, it will separate only the muscles which would probably have refused to unite without the presence of the layer of clot; and the dissolved clot, mixed with pus, may afterwards escape through the drain established from the first in the plan of dressing.

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[1] *Braithwaite's Retrospect*, Vol. I., January, 1865, contains an article from the *Edinburgh Medical Journal* for September, 1864, by John Dix, Esq., advocating the use of a fine iron wire made to encircle the artery as the track of a comet encircles the sun, the more curved portion of the parabola being near the artery and the expanded portion out upon the skin. The wire has a straight needle upon each end. Each of these is plunged through the flap, entering close to the artery, one on one side and the other on the other side, and emerging through the skin at a considerable distance from each other. The wires are then tied or twisted and a compress placed between the skin and the outer loop made by tying the wire. The wire is afterwards cut close to the skin on one side as for the removal of a stitch, and pulled out by traction upon the other end.

The obvious objection to this expedient is that the delicate wire, by cutting through the softer tissues, may loosen its pressure upon a large artery before it is sufficiently sealed by the solidification of the clot.

The use of an elastic rubber cord applied in this way would be free from this objection, because its size would prevent its cutting and its elasticity would cause it to constrict closely upon the tissues embraced, though they might considerably diminish in volume.

The metallic wire employed in this manner must be very fine in order that it may be drawn out by a pull upon one end, as in withdrawing a suture.

The writer has employed the method upon small arteries with coarser wire, attaching another wire to the loop with which to pull it out through the wound, the loop coming out first and the free ends last.

The wires, when to be withdrawn, are cut even with the skin and withdrawn by the attached wire.

Another source of failure to secure primary union may be the presence of bone-dust from the saw, as it passes through the bone. This is certainly a reason for employing the muslin retractor instead of the fingers of assistants, or for sawing the bone before the soft parts are cut, which, from their position beneath the bone, receive the dust as it falls from the saw. These particles, failing to get washed away, become dead matter in the spaces which they occupy, poisoning the tissues inclosing them, and interfering with primary union.

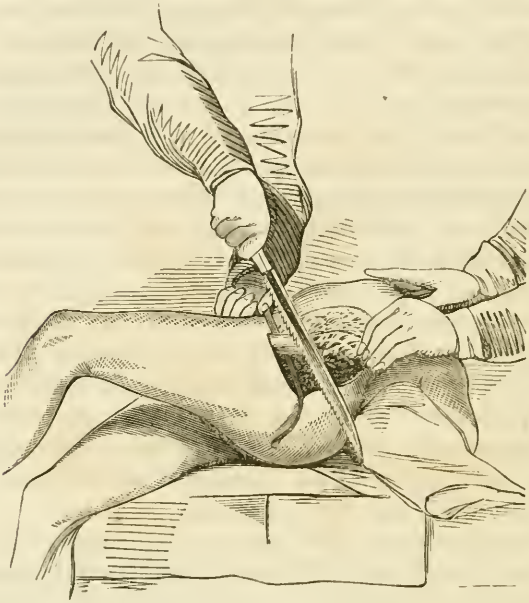
5. *The final result* is best, when the soft parts readily slide over the end of the bone, favouring the formation of a bursa mucosa, the fluid in which makes an easy cushion to protect the end of the bone from pressure. The problem, then, is so to conduct the amputation as most to favour this result. The covering of the end of the bone with a patch of periosteum must obviously tend to this condition. Brunninghaussen, in the beginning of the present century, seems to have been the first to recommend this expedient. The periosteum is peeled up, in connection with its areolar investment, so that it shall not be deprived of its circulation. Samuel Cooper, in his *Surgical Dictionary*, doubts whether the advantage is sufficient to compensate for the trouble of securing it. This will depend very much upon the possession, by the operator, of good scraping forceps for peeling the periosteum from the bony surface.

A more important means is to shape the incisions so that the cicatrix shall not come upon the end of the bone and make a ligamentous adhesion to it, rendering the formation of a bursa slow, if not impossible. This indication, if strictly followed, would rule out circular amputations entirely, and would, in practice, reduce the plans to those in which there is either a single flap, or two flaps of unequal length, so as to bring the cicatrix to one side, and secure the apposition of sound original tissues upon the end of the bone.

The following figures illustrate what the writer believes to be the best method of doing this, in amputations of the humerus and femur, while there is a great saving of blood, and a speed of operation as great as by any other method.

Fig. 4 represents the conclusion of the first stage in amputation through the upper third of the femur. An anterior exterior flap is made of the parts containing only small vessels, by cutting from the surface inward, and cutting the muscles shorter than the integument; and if the expedient of saving the periosteum is practised, this is peeled off from the bone, in connection with the flap. The retractor is then introduced on the inner side, carried under the bone, and over the integument on the outer side, when it is turned over, presenting its grooved surface to the bone. The saw is then applied, as seen in the figure, and worked through the bone into the groove in the retractor, which effectually holds the soft parts from contact with the teeth of the saw. For use upon the thigh, the retractor may be most conveniently of nearly the following dimensions: Length of metal, 14 inches, bent at the extremities so as to span 10 inches; diameter of the groove from one outer surface to the other, half an inch; each probe end is about 3 inches long, one larger than the other, leaving the body 8 inches long.

Fig. 4.

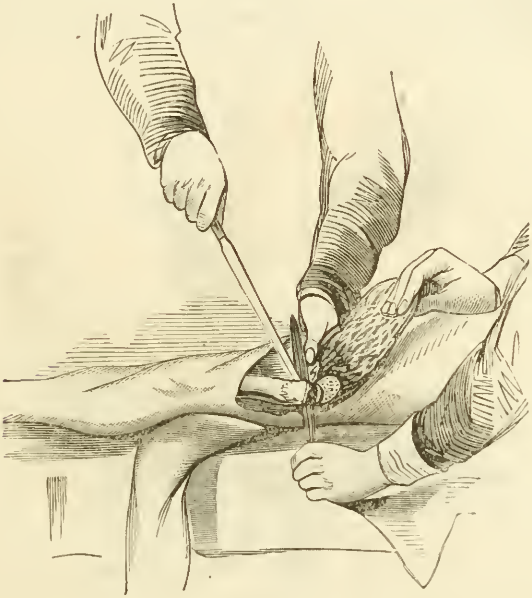


Thigh Amputation in the Upper Third.—The retractor has been placed under the bone, and the saw has been placed on top.

Fig. 5 illustrates the beginning of the third stage of the operation at the junction of the middle and lower third, the sawing of the bone being regarded as the second stage.

The bone is seen to have deviated from the straight line, making an obtuse angle at the point where it has been sawn through. The long knife is being introduced under the bone, along the groove in the retractor, and the operator is grasping the femoral artery between the thumb and fingers of his left hand, the thumb being plunged into the wound for that purpose. As the operator is supposed to stand upon the right side of the patient, the thumb will be turned from himself in amputating the left thigh or the left arm, and towards himself in amputating the right. A lighter shading, bounded by a curved line upon the end of the denuded fragment of bone, and a corresponding one upon the flap as it is seen turned back, represents the periosteum which has been peeled up for the purpose of covering the end of the bone. The same is also shown in Fig. 6. The knife having been passed through, along the groove, an assistant withdraws the retractor, pulling it towards himself, and from the operator.

Fig. 5.



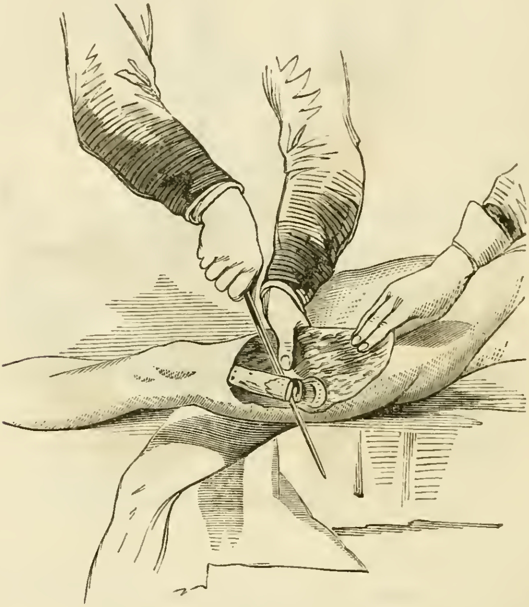
Thigh Amputation at the Junction of the Middle and Lower Third.—The bone has been sawed through, and the knife is being introduced along the groove of the retractor.

Fig. 6 is a prosecution of the third stage, the retractor having been withdrawn, the circulation in the great vessels arrested by the thumb and fingers of the operâtor, who knows the degree to which he arrests the flow of blood in the artery by the impulse against his thumb, occasioned by the pulsation. These conditions having been secured; the second and final incision is made as much as possible by one sweep of the knife, when the amputated portion of the limb drops by its own weight, and an assistant immediately seizes the chief artery and ties it, and, in rapid succession, secures all the vessels that bleed, by ligature, torsion, or the needle after Simpson's plan.

If the operator is cool and skilful, he controls the bleeding more effectually than can be done in any other method; and if he becomes excited, and fails to control it at all, the vessels are exposed to free access, and can be plugged by putting finger-ends directly upon their open mouths, suppressing the hemorrhage as long as may be desired. The amount of blood lost, when this method is well practised, is surprisingly small.

When the amputation is near the knee-joint, the flap, instead of being an antero-exterior one, should be directly anterior, or antero-interior, to enable the surgeon to get his thumb upon the artery without the interposition of too much muscular tissue.

Fig. 6.



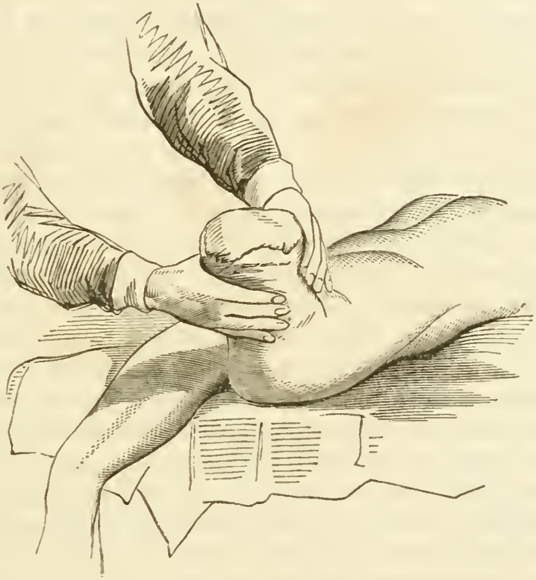
Amputation of Thigh at the Junction of the Middle and Lower Third.—The retractor has been withdrawn by an assistant, and the knife is ready for the final cut. The femoral artery is held between the thumb and fingers of the operator.

In the posterior cut, the operator may make a flap of what length he pleases. He may form his flaps, both anterior and posterior, with square corners, the anterior long and the posterior short, after Teale's plan; though the anterior flap with curved border, and the posterior flap short and made by cutting obliquely out from the point where the bone is divided, will probably come most in favour, in consequence of the greater facility in making the cuts. An objection to Teale's method is the great weight of the long flap, rendering it liable to McLeod's observation that, in rough handling, it may sway about, or, if rendered light by depriving the flap of its subjacent muscles, it may die from want of blood. Another objection is the want of economy of length of stump where length is desirable, the amount of integument needed to form the long rectangular flap rendering it unavoidable to saw the bone higher than might otherwise be necessary.

There can be no advantage in a redundancy of integument, so that if the principal anterior flap meets the line of integument upon the short posterior flap without any tension whatever, the case is better than a superfluous amount of integument.

Fig. 7 represents the appearance of the stump. The end of the bone is covered by the anterior flap, so that a bursa mucosa will easily form over it, and the cicatrix is out of the way of pressure in wearing an artificial limb.

Fig. 7.



Thigh Amputation. Appearance of the Stump.—The cicatrix will be away from the end of the bone.

Thus it is claimed that the method here presented is equal to any other in the facility with which it may be performed, and in the preservation of the vitality of the parts intended to cover the end of the bone; greatly superior to all other methods in the saving of blood; superior to all varieties of the circular method in the rapidity of healing, and in this respect equal to any other variety of the flap method; and in the final result, superior to the circular method and to the plans by flaps of equal length, and equal to any other plan by unequal flaps.

With this estimate of its value, the writer commends the method to the profession.

ART. III.—*On Orbital Aneurisms; with the History of a Case of Aneurism of the Ophthalmic Artery, successfully Treated by Ligation of the Common Carotid.* By T. G. MORTON, M. D., one of the Attending Surgeons of the Pennsylvania Hospital, and one of the Surgeons to Wills (Ophthalmic) Hospital.

IN the year 1809 Mr. Benjamin Travers read before the Medical and Chirurgical Society of London "The History of a Case of Aneurism by Anastomosis in the Orbit, cured by Ligation of the Common Carotid Artery," which account was published in the *Transactions* of the Society, and represents the first case of aneurism in this locality brought before the profession. Since few similar cases have been reported, special notice of each is desirable, in order to render the diagnosis more certain. Judging from the works on general surgery, as well as those devoted entirely to diseases of the eye, few writers appear to have met with this affection, and with some the disease is not even alluded to. Most of the early cases have been reported as aneurisms by anastomosis, authors following in the course laid down by Mr. Travers, whose mind was, at the time his case presented, impressed by the teachings of Mr. Bell, whose description of this state of the bloodvessels had only just been promulgated, and the possibility or probability of the disease being a true aneurism was entirely overlooked.

In 1815 Mr. Dalrymple placed the second case on record, and describes the disease as aneurism by anastomosis, and in referring to the preceding case remarks that he "could not fail to perceive in it the characters of that particular affection, which, with perhaps doubtful propriety, has been called 'aneurism by anastomosis' by Mr. Travers."

Mr. Guthrie, when referring to orbital aneurisms as a cause of exophthalmia, says: "There are two cases of that disease (aneurism of the orbit) recorded, called aneurism by anastomosis." In two cases where *post-mortem* examinations have been made, one recorded by Guthrie (*Surgery of the Eye*), and one by Mr. Nunnelly, of Leeds—the symptoms in each case presenting similar characters to those cases described by Travers and Dalrymple as anastomotic aneurism—true aneurisms in each instance were found upon the ophthalmic artery. In the case reported by Mr. Guthrie an aneurism the size of a large nut was found on each ophthalmic artery; and in the one recorded by Mr. Nunnelly, whose patient died on the sixteenth day from secondary hemorrhage, after the ligation of the carotid, a true aneurism upon the ophthalmic was also found. It is, therefore, not unlikely that all the cases described as aneurisms by anastomosis have been in reality true aneurisms, with the exception of those aneurisms of the orbit which have come on secondarily from an integumentary nævus, and have spread into the orbit. These cases would of course be properly classed under the head of aneurisms by anastomosis.

The arguments in favour of their true aneurismal character are these: "Aneurism by anastomosis comes on gradually, generally early in life, as the result of the growth of a congenital nævus; aneurism of the orbit very suddenly, often the result of a blow, and almost always in advanced life: aneurism by anastomosis occurs in the subcutaneous tissues; aneurism of the orbit generally in the deepest part of the cavity: aneurism by anastomosis involves all the neighbouring vessels, arteries, veins, in active disease; aneurism of the orbit is generally limited to a single part, or if the neighbouring vessels are dilated, they seem only enlarged from obstruction: ligature of the trunk of a vessel leading to an undoubted aneurism by anastomosis is an extremely unsuccessful operation: in aneurism of the orbit a very successful one:—finally the cases dissected have turned out to be common aneurism."[1]

In the cases reported by Travers, Dalrymple, Nunnelly, Gioppi, Scaramuzza, Middlemore, and in the case which came under my care, the disease appeared suddenly during pregnancy or following childbirth; a sharp snap was felt in the region of the orbit, as if something had given way; swelling of the eyelids; protrusion of the eyeball, with marked pulsation following, together with the aneurismal thrill, heard all over the head but most distinctly on the diseased side.

In the cases of Roux, Velpeau, and Herpin it also appeared suddenly. In the cases of Warren, Coe, Scott, Bush, Bowman, Van Buren, and Curling a blow on the head seemed to be the exciting cause.

That the diagnosis may be sometimes extremely difficult, and even entirely at fault, may be seen by a review of a case operated upon by Mr. Bowman, in which there seemed to be not the slightest doubt in regard to the nature of the affection. The patient had "severe pain in the head after an accident, aggravated by stooping; disturbed sleep; a beating noise in the head, compared to a steam engine; a loud bruit, synchronous with the pulse; troubled vision; protrusion of the globe of the eye, and pulsation in the orbit strong enough visibly to lift the fingers. The carotid was tied, the bruit ceased, but recurred, though not so loud, eight days afterwards. The patient died from secondary hemorrhage, when it was found that the arteries were quite healthy; and the only diseased appearances were in the ophthalmic vein, cavernous, circular, and transverse and superior petrosal sinuses, which were filled with coagula. The pressure on the carotid artery in the sinus must have produced the bruit, the obstruction to the return of blood by the veins of the orbit, the protrusion of the eyeball, and the congestion of the parts around it." Mr. Hulke,[2] the reporter of the case, says that "each diastole of the ophthalmic artery must have been attended by a general momentary increase of the whole quantity of blood in the orbit, because its exit through the ophthalmic vein was cut off, and the resisting bony walls of the orbit could permit a distension in front only."

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[1] Holmes' Surgery, vol. iii. p. 491.

[2] Ibid., vol. iii. p. 494.

The history of this case is extremely valuable in a diagnostic point of view, demonstrating that protrusion of the globe of the eye in this instance was due entirely to obstruction of the post ocular veins, and that the orbit which presented all the appearance of disease was perfectly normal and simply congested from the venous obstruction.

Aneurism of the internal carotid in the sinus might also render the diagnosis difficult, for in this affection many of the symptoms are very similar, and the condition of the patients as distressing in a well-marked case; the symptoms would come on rapidly very likely after a blow or other injury; there will be, perhaps, a sharp crack heard, followed by a sawing or rasping noise, readily detected by the ear applied to the patient's head and down the neck, pressure on the carotid checking it entirely.[1] "If the disease is limited to the part of the artery contained in the sinus, no tumour will be perceptible externally, or any pulsation or fulness of the orbit. The first symptom of pressure upon the orbital nerves is either internal strabismus, from paralysis of the sixth nerve, or ptosis with external squint and dilated pupil, from pressure on the third nerve, or loss of sensation of the parts supplied by the supra-orbital nerve. Sight on the side of the disease is usually not affected; sometimes, however, objects are seen double, or there may be more or less indistinctness of vision, the consequence probably of dilatation of the pupil."[2]

The symptoms of cerebral disturbance do not seem greater than in aneurism of the common carotid, where we have headache, giddiness, inability to stoop, frightful dreams, etc. There is no pressure on the brain, since the growth of the tumour is opposed by the dura mater and the bony wall of the calvarium. "Thus we can distinguish it from aneurism of the ophthalmic branch, in which there are many symptoms in common, but in which latter we have the protrusion with the pulsation of the globe, etc."

In a large majority of all the cases of orbital aneurism the ligation of the common carotid has been performed, and with a remarkable degree of success; so much so that I was induced to recommend its adoption in the following case, which came under my care in November of last year—the result of which has more than equalled my expectations. Of the thirty-two cases of orbital aneurism (which I have been able to collect), including the three congenital nævi which involved the orbit secondarily, the carotid has been tied in twenty-eight cases, with three deaths; two receiving only temporary benefit (the nævi), two were unsuccessful (one afterwards cured by injections of a coagulating fluid), and of the remaining four cases, two were treated by injections, and two by digital compression, and all four cured. Considering the magnitude of the vessel ligated, and the dangers from the shutting off the supply of blood to the brain, we certainly present very favourable statistics in regard to the treatment by ligation.

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[1] Holmes' Surgery, vol. iii. p. 492.

[2] Ibid.

Case of Aneurism of the Ophthalmic Artery, treated by Ligation of the Common Trunk of the Right Carotid Artery; Cured.—Mrs. P., æt. 36, consulted me at the request of Dr. Crowell, of West Philadelphia. She had been a healthy, active woman; fair complexion; sanguine temperament; has had four children, the eldest now five years old. During the night of December, being some two months pregnant, she was awakened out of a sound sleep by what she described as "the report of a pistol" over her head; but was persuaded that it was only a dream. To her surprise, she experienced a peculiar sensation in her head, which was accompanied by a slight purring noise, especially over the right temple, which prevented her getting asleep; following this a dull headache set in, with a continuance of the unusual noise in her head; quickly following this, the vision began to show some defect, but entirely confined to the right eye. During her pregnancy these symptoms were very gradually increasing, but especially towards the last three or four months; the vision, which had only been confused, rapidly failed her; memory became defective, and prominence of her right eye manifested itself, and the noise in her head became exceedingly distressing, and confused her so much as to materially interfere with ordinary conversation. During the last month of utero-gestation the eye became somewhat pushed upwards, as well as forwards, with a convergent strabismus, associated with double vision; her expression was dull and heavy; the supra-orbital and nasal vessels became very prominent and tortuous. After her confinement the dull headache was somewhat relieved, but her other symptoms were decidedly on the increase. At the time she consulted me, which was seven weeks after her confinement, I found the right eye quite prominent, and congested, with a slight strabismus and dilated pupil. The adjacent vessels were full and tortuous, and could be seen to pulsate, especially those on the inner side of the nose; the fingers placed upon the eyeball felt a distinct pulsation, which the eye of the observer could also detect; a distinct aneurismal thrill was also heard all over the head, but especially loud in the right temple. When pressure was made upon the right carotid the thrill ceased. The suddenness of the attack, together with the symptoms, made the diagnosis of the case plain to me, as one of aneurism of the orbit and of the ophthalmic artery. In some cases of this disease many months and even years elapsed before the disease showed any signs of rapid advance; while in others the affection assumed a frightful condition within a few weeks, or even days. This may be accounted for readily by supposing the disease in some of the cases to have originated far back in the orbit, or even before the artery enters the orbit; that the spreading of the disease might be for a time prevented by the natural configuration of the parts; while, if the artery had given way just posterior to the globe of the eye, the advance would be proportionately rapid, as it would have simply the soft parts to oppose its progress. Supposing the artery to have given way at the entrance to the orbit we would have the disease, perhaps, remaining stationary a long time; but gradually, as the coats of the vessel became impaired, so we would have the disease creep into the orbit; and when once there, having little to oppose its progress. To what extent the protrusion of the eye in the case just reported was due to the aneurism alone, or to the obstruction caused by its pressure upon the ophthalmic vein or both, seemed impossible exactly to define.

The disease was in her case advancing, the prominence of the eye becoming more marked. She described her condition to me as "unendurable," having no rest day or night from the incessant noise in her head.

Having such fair statistics from operative measures, I proposed the ligation of the carotid, which was gladly assented to. I made several attempts at digital compression, which elicited so much complaint that I determined at once to ligate the vessel.

Dec. 4. In the presence of my colleagues of the Pennsylvania Hospital, and Dr. Agnew, I ligated the common trunk of the right carotid at the usual place above the omo-hyoid, the patient having been brought under the influence of ether. No difficulty was experienced during the operation. On tightening the ligature, the aneurismal thrill in the head disappeared, the pulsation in the eye ceased, and the turgescence of the vessels around the eye partially subsided; but no pulsation could be detected in them, and a blanched appearance of the face was observed. The wound was brought together by sutures and dressed with simple cerate. 5 P. M. Pulse 72; complains of dryness and soreness in the throat; sleeps comfortably; some headache, entirely on the left side; orbital vessels enlarged, but no pulsation in them; eye somewhat receded; says her head is entirely free from all noise. 9 P. M. Slight murmur heard in front part of her head; complains of her throat as feeling very sore.

5th, 9 A. M. Continued headache on left side; pulse 100; no thrill heard in the head; little fulness about the eye; great difficulty in swallowing.

6th, 9 A. M. About midnight had a convulsion, which was of short duration; slept comfortably at intervals; has profuse sweats of the face alone; some secretion in throat, and can swallow better; wound looks well.

7th, 9 A. M. Pulse 88; vision, which has been improving since the operation, is now perfect; there is much mucus in the throat, and with difficulty expectorated.

9th, 9 A. M. Wound suppurating freely, and has a healthy appearance; can swallow much better; general condition excellent.

14th. Continues improving.

21st. The ligature came away this morning, it being the seventeenth day; the wound is closing up; the patient has been up and dressed; appetite good.

28th. Left the city for her family, feeling quite well, but weak; wound closing. Her condition at this date may be noted as follows: Vision perfect; no prominence of the eye or pulsation; no enlarged vessels seen about the orbit; appearance of the face natural; no thrill can be heard in the head, and the patient experiences not the slightest trace of the noise in the head with which she was for over a year so much troubled.

Jan. 16. Wound still unclosed at point of ligation, with a very small amount of discharge; general health improving.

30th. Came to town to see me; feels perfectly well, and goes about as usual.

Remarks.—This is, so far as I can learn, only the third case of spontaneous aneurism of the orbit where ligation of the carotid has been performed in this country. The first case was operated upon by Dr. Warren in 1829, in which he endeavoured to cure the disease by ligating the enlarged vessels external to the tumour, *i.e.*, the anastomosing branch of the ophthalmic and the facial; the operation was unsuccessful because the enlargement of these vessels was merely a result of the disease which was deep in the orbit; subsequently, Dr. Warren tied the common carotid, and with perfect success. This surgeon also tied the carotid for a small traumatic aneurism at the inner angle of the right eye with no alleviation of the disease; had he in this case operated, as he did in his first case of deep orbital aneurism, viz., tied the vessels, which evidently supplied the tumour, I believe the operation would have been a success; for at the angle of the eye the anastomosis from the other side is so complete, that the ligation of the carotid could hardly be expected to reach the disease; in this case the angular artery was probably the vessel implicated, the disease only partially entering the orbit by anastomosing with the nasal branch of the ophthalmic. The second is reported by Dr. Dudley, of Lexington, in 1839, an extremely interesting case, published in the proceedings of the College of Physicians (*Am. Journ. of Med. Sci.*, for 1841), in which the carotid was successfully ligated. The other cases reported by Mott and Wood and Van Buren were aneurisms following injury, or from integumentary nævi, which attacked the orbit secondarily.

In the case which I have reported the disease did not seem to make much headway until towards the close of utero-gestation, which probably was an exciting cause; but when the advance did commence, it appeared to be rapid, following the same course as many of the cases reported; and I believe that if the operation had been delayed for any length of time in my patient's case, the same frightful appearance, with excruciating suffering (the prominent symptoms in many of the cases reported), would have fallen to her lot; which she escaped by early operative interference. The only unfavourable symptom which presented during the treatment was the occurrence of the convulsion, thirty-six hours after the operation; probably due to an unbalanced state of blood in the brain, the anastomosis not having been perfectly established. The occurrence of this disease during pregnancy in many of the cases forms an interesting feature in the history of the affection.*

The treatment of these aneurisms by compression is a brilliant success for conservative surgery, and was first practised by Professor Gioppi, of Padua, in 1856, and his example was soon followed, in a similar case, by Scaramuzza, of Verona, in 1858. The accounts of these cases are very interesting and instructive, and demonstrate the great value of treatment by compression, where the patient can bear the ordeal. Since they represent the only two cases on record, I insert them here.

"Maria ——, æt. 42, entered the clinic of the hospital of Padua, July 4, 1856. She was of feeble constitution. Seventeen days previously, during an effort of childbirth, she felt as though her eye had started from the orbit. Four days afterwards the lids and globe of the eye were immovable, and there was complete blindness. On admission, the aspect of the patient was frightful. The eye lay motionless on the cheek; the pendulous lid was red and livid, the cornea infiltrated and opaque; blindness complete. There were pulsatory noises in the head, and the finger, when pressed back at the upper border of the orbit, felt an elastic aneurismal tumour thrusting forward the eye. Compression of the carotid artery very soon produced faintness, and Gioppi employed the method of Valsalva, fearing to use the ligature. It failed. Digital compression was then employed for a minute or two at a time, suspending it when faintness threatened. This compression was effected with the finger by the patient herself, and some of the convalescents and others in the ward. The effect was of the happiest kind. On the following day there was already a diminution in the force of the pulsations, and at the end of the fourth day all pulsation had ceased. From that time all went on well. Finally the eye retreated within the orbit, and sight returned, the patient remaining only somewhat myopic, and with a dilated pupil.

Catharine B., of Verona, a washerwoman, æt. 49, small and weakly, was admitted into the eye ward of the civil hospital of Verona, April 4, 1858. She was weak in health, and subject to palpitation. A few days previously, after a violent access of fever, she felt an acute pain in the left orbit and ear; something seemed to give way in the orbit; the eye became enlarged, and the patient could not distinguish light from darkness. On her admission, the left eye projected entirely beyond the orbit; the lids did not cover the ball; the eye red; the cornea dull. The patient could hardly discern light from darkness. There was a pulsation and thrill over the orbit and left temple. She was the subject of dilatation of the heart and of the arch of the aorta. Digital compression of the carotid was therefore employed here very cautiously, for not more than five minutes at a time; during the eighteen days that the treatment lasted, the total space of time during which compression was used amounted only to seven hours and twenty minutes. The eye had then entirely entered the orbit, and pulsation had ceased. The cure was complete."[1]

Mr. Hart, in a case of traumatic arterio-venous aneurism in a boy, resorted to digital compression for three weeks, without success, when the main vessel was ligated, and Mr. H. "thinks that his patient had a great advantage in that the collateral circulation had been developed previously by digital pressure, and he therefore recommends that in future it be adopted, with a view to save the brain from the shock of a sudden diversion of the blood."

In regard to the treatment of these aneurisms by injection of various coagulating fluids, enough has been done to justify the operation where the aneurism can be definitely located, and when we can be sure of the fluid entering the sac of the aneurism, and not getting into the deep cellular tissue, which accident would probably lead to serious suppurative inflammation, with a probable loss of vision, or even death. Such accidents have taken place, and, to my mind, the operation is fraught with much danger, and with less prospect of success than that of the ligation of the carotid or the treatment by compression, and could only be practised in a very limited number of cases. The treatment by galvano-puncture has also been suggested.

The *London Lancet*, for December, 1864, which has been received since the above was written, contains the proceedings of the November meeting of the Medico-Chirurgical Society; at which Mr. Nunnelly read a paper on "Vascular Protrusion of the Eyeball:" being a second series of three cases, and two *post-mortem* examinations of so-called aneurism by anastomosis of the orbit; with some observations on the affection. Mr. Nunnelly's experience has been great, no less than seven cases of this interesting disease having been under his care.

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[1] Hart, London Lancet, March, 1862.

In referring to his first series of four cases, "Mr. Nunnelly suggested that as these (like the three which form the subject of the present communication, and especially the results of the *post-mortem* examinations of the two patients who died long subsequently to deligation of the carotid artery, the particulars of which he was about to relate) proved the opinion so long entertained of the nature of the affection, aneurism by anastomosis of the orbit, to be incorrect, the name of it should be altered, and he suggested that of 'vascular protrusion of the eyeball,' as more in accordance with its true character."

The first case was traumatic, with symptoms of fracture of the base of the skull; the carotid was tied, and with entire success.

The second was spontaneous, in a woman aged 47; was sudden in its appearance, but no operation had yet been performed, although Mr. Nunnelly thought that soon, from the increasing symptoms, the patient would be obliged to consent to ligation of the carotid.

The third was also spontaneous, the cause obscure, "the protrusion of the globe excessive;" ligation of the carotid was performed, the protrusion of the eye was arrested; the patient died eighteen months afterwards, malignant disease having been evident for a long time prior to the patient's death; a *post-mortem* examination "revealed a tumour developed in the cavernous sinus, pressing upon the ophthalmic vein, and passing into the orbit and the zygomatic fossa;" other tumours were found in the brain, and one in the chest, of a malignant character, showing the diagnosis had been incorrect. The second *post-mortem* was upon one of the four patients operated upon, and reported by Mr. Nunnelly in the forty-second volume of the Society's *Transactions*, who lived five years after the ligation of the carotid, and died from a bronchitis. "The entire brain was found to be small, and the anterior lobe of the cerebrum on the side on which the carotid had been tied, was considerably smaller than that of the other side; on the side of the sella turcica, just as the ophthalmic was given off from the carotid, was found a circumscribed aneurism, filled with a solid coagulum."

Mr. Nunnelly contended that the protrusion of the eye, in most cases, was due to the pressure upon the post-ocular veins, and that, as a general rule, the orbit was free from disease; but he certainly forgets that in many of the cases, distinct and readily defined aneurismal tumours could be felt in the orbit, which in all probability originated adjacent to the globe of the eye, and the disease being entirely confined to the cavity of the orbit; for in severe cases cures have been effected by injecting into the aneurismal sac fluids of a coagulating nature; and there is really no reason why the artery should be predisposed to give way prior to its entering the orbit. The protrusion of the eye may be due, and probably is, in many cases, to simply venous obstruction, but in many of the cases reported, the disease was orbital entirely, and the prominence due directly to the growth of the aneurism itself. Mr. Curling justly criticizes the proposed change by Mr. Nunnelly in the name to "vascular protrusion," remarking, that "to class affections, of very different character, under one common head, taken from a prominent symptom, was not calculated to advance surgical pathology and practice."

The following table exhibits the number of cases of orbital aneurisms reported, with the operator, date of operation, and the results. One case, reported by Dr. Parrish, of Philadelphia, of a boy with traumatic orbital aneurism (see *Amer. Journ. of the Med. Sci.*, Oct. 1841), is not inserted here, for no treatment was instituted in the case.

	Operator.	Date.	Ligation.	Result.	Origin.
1	Travers	1809	Common carotid	Cured	Sudden during pregnancy.
2	Dalrymple	1813	do.	do.	do.
3	Roux	1829	do.	Success incomplete	Sudden and spontaneous.
4	Warren	1829	do.	Cured	do.
5	Warren	1829	do.	Unsuccessful	Injury.
6	Scott	1834	do.	Cured	do.
7	Busk	1836	do.	do.	do.
8	Dudley	1839	do.	do.	No observable cause.
9	Jobert	1839	do.	do.	Injury.
10	Velpeau	1839	do.	do.	Sudden and spontaneous.
11	Wood	1842	do.	do.	Congenital.
12	Mott	No date	do.	Success incomplete	do.
13	Van Buren	do.	do.	Cured	Injury.
14	Herpin	1844	do.	do.	Sudden and spontaneous.
15	Petrequin	1845	do.	*Died*	
16	Nunnelly	1852	do.	Cured	Injury.
17	Nunnelly	1856	do.	do.	Slow during pregnancy.
18	Nunnelly	1858	do.	*Died*	Sudden and spontaneous.
19	Nunnelly	1859	do.	Cured	Injury.
20	Walton	1851	do.	do.	Congenital.
21	Brainard	1852	do.	Unsuccessful	
22	Curling	1854	do.	Cured	Injury.
23	Coe	1855	do.	do.	do.
24	Bowman	1859	do.	*Died*	do.
25	Bowman	1860	do.	Cured	
26	Syme	1861	do.	do.	
27	Hart	1861	do.	do.	Injury.
28	Morton	1864	do.	do.	Sudden during pregnancy.
29	Nunnelly	1864	do.	do.	Injury.
30	Nunnelly	1864	do.	Successful in arresting the protrusion. Patient lived 18 months.	Spontaneous.
31	Bourget		Treated by injection	Cured	
32	Walton		do. do.	do.	Sudden during childbirth.
33	Gioppi	1856	do. compression	do.	Sudden after childbirth.
34	Scaramuzza	1858	do. do.	do.	Injury.

Philadelphia, January, 1865.

ART. IV.—*On the Causes of Failure in Vaccination.*

By D. FRANCIS CONDIE, M. D.

THE evidence which has been accumulated in proof of the complete protection against the variolous contagion, conferred upon the human subject by effective vaccination, is too overwhelming and positive to admit of the possibility of doubt or cavil. Whenever, therefore, the occurrence of smallpox, whether in its modified or unmodified form, is witnessed in subjects reputed to have been vaccinated, it is very evident that from some cause or other the attempt at vaccination has in these cases entirely failed, or has been effective only to a partial extent.

A careful inquiry into the causes of the complete or partial failure of vaccination in certain cases is demanded, as well for the safety of those upon whom the operation is performed, as for the protection from smallpox of an entire community, amid which it may perchance be propagated through even those who are supposed to have been fully protected from the variolous contagion. The subject is one of the highest importance—interesting not merely to the physician, but to every one whether within or without the profession. To its investigation my attention has been directed for many years past, under circumstances peculiarly favourable to the attainment of correct conclusions. The results of my observations I beg leave to lay before the medical profession, in the hope that they may lead to the adoption of such precautions in reference to everything connected with vaccination as shall render it in all instances a sure and permanent protection against the contagion of smallpox.

The general conclusions to which I have been led, in respect to the leading causes of the failure of vaccination as a reliable preventive of variolous infection, are that, in the great majority of cases, at least, the want of success is traceable either to the employment of spurious or effete matter, or to the communication to those operated on of only a partial vaccine infection, or one of only temporary duration.

There are many causes by which vaccine matter may be rendered inactive or effete. Even after a genuine and perfect vaccine vesicle has been produced by the introduction of the most unexceptionable virus, its regular course may be interfered with by some accidental irritation, and simple inflammation set up, causing the vaccine lymph to become mixed, to a greater or less extent, with ordinary pus-globules. Should the scab, formed in such a case, be made use of for vaccinating, a sore arm will in general occur, but either no vaccine infection of the organism will be produced or only to a more or less limited extent; insufficient always to insure complete and permanent protection from the variolous poison. By the experienced and observant vaccinator, matter thus deteriorated would, of course, be readily detected, or should it have been accidentally made use of, he would find no difficulty in distinguishing the local phenomena induced by it from those of genuine vaccination. But, unfortunately, vaccination is often intrusted to careless and inexperienced operators, or to persons altogether unfamiliar with the true characteristics and regular course of the phenomena which result when vaccination is performed with genuine and efficient matter. By such, a sore arm produced by the insertion of spurious or partially effete matter, has been, I know from personal observation, not unfrequently, mistaken for those of perfect vaccination, and thus many an unfortunate individual, reputed to be protected from the smallpox, is sent forth to encounter its contagion with the liability to an attack of smallpox or of the so-called varioloid disease.

A fruitful source of imperfect vaccination is the use of vaccine matter which has become partially effete in consequence of its having been passed through the persons of a long succession of human subjects. Virus that has thus been made use of for vaccination, year after year, is always liable to become, to a greater or less degree, diminished in efficiency. This, I know, has been denied. The efficiency and characteristic properties of vaccine virus, however long it may have been in use, suffer, it is maintained, no deterioration. The virus in use at the present day, it is argued, is derived from that with which, at the commencement of the present century, the first vaccinations were performed in this country, and yet the phenomena resulting from its insertion in the human subject do not differ in any appreciable degree from those described and pictured by Jenner and the early vaccinators. It is hardly necessary to point out the fallacy of such statements. The assertion that no renewal of vaccine virus from the cow has taken place since the first introduction of vaccination in the United States is not accurate. As early as the year 1815 many of our physicians obtained new matter from its original source, to replace that which they had been in the habit of using. And this movement, to which they had been prompted by the example of certain of the physicians of Europe, was confessedly resorted to in consequence of the frequent disappointments which had been experienced in effecting a satisfactory vaccination with the matter already in use. Within the last eight or ten years I have myself had the pleasure of supplying many physicians, located in different parts of Pennsylvania, with recent matter; the greater activity of which, and the more prompt and certain manner in which its effects upon the systems of those vaccinated with it were displayed, was noticed by all who made trial of it.

I believe that sufficient proof of the loss, to a certain extent, of the prophylactic efficiency of vaccine virus, in its passage through many human constitutions, is the fact that it was not until after a number of years subsequently to the general adoption of vaccination in most parts of the world, and the entire disuse of variolous inoculation, that smallpox, especially in a more or less mitigated or modified form, again made its appearance, and prevailed in many places epidemically.

In Philadelphia, as we learn from the registers kept at the City Dispensary, during the sixteen years preceding 1802, a period when variolous inoculation was the only known protection against casual smallpox, *fifty-one deaths* from this disease took place, in a mortality from all causes of *seven hundred and one;* being a proportion of *seventy-three deaths* to the thousand; which corresponds with the most favourable European estimates.

From the commencement of the year 1807 an official registration of the deaths occurring in Philadelphia was required to be made by the Board of Health. From this registration, for the years 1807 to 1810, both inclusive, variolous inoculation being still performed to a considerable extent, we find that the entire mortality of the city amounted to *seventeen hundred and forty-four*, of which number there were *four hundred and twenty-nine* from smallpox, being a proportion of *forty* to the thousand.

In 1811 variolous inoculation was prohibited by law. From this period until the close of 1815, a period of four years, not a single death from smallpox is recorded. In 1816 the disease was introduced into the city by emigrants from Europe, and *ninety-seven* deaths are reported to have resulted from it. Some who were believed to have been protected by vaccination were also attacked by smallpox in a modified form. None of these, however, appears to have died.

In 1820, 1821, and 1822, Philadelphia was entirely exempt from smallpox. In 1823–24 the disease again made its appearance, and gave rise to a mortality amounting to 484. A large number of those who were reported to have been successfully vaccinated were attacked with a varioloid affection, approaching in its phenomena and intensity more or less nearly, in different cases, to genuine variola. Very few, proportionally, of these varioloid cases proved fatal.

From the last-mentioned date to the present time, with few and comparatively short intervals, smallpox has annually made its appearance in our midst, in some of its visitations exhibiting considerable malignancy, and spreading over a large portion of the city.

Pretty much the same history may be given of the prevalence of smallpox, during the present century, in every part of the world, especially from the period when vaccination entirely superseded the practice of variolous inoculation. Thus we perceive that the vaccine virus, which Jenner and his immediate followers derived directly from the cow, conferred for many years a prophylactic influence upon the human system, which in all cases was complete and permanent. After, however, the virus had been transmitted through a long series of human organisms, it lost more or less of its protective power, and they who had been subjected to its influence began again to exhibit a liability to the variolous contagion; this liability increasing in proportion to the remoteness from the cow of the matter employed in vaccination. This fact is most strikingly evinced by the very extensive series of revaccinations that have been practised yearly, from 1832 to the present time, among the soldiers of the Prussian army.

That the vaccine virus does in time lose some portion at least of its activity, and of the promptness and intensity of its action upon the human organism, is very fully shown by the fact that when the matter taken direct from the cow is made use of for vaccination, a much more decided and intense action is produced than that which results from the use of matter that has already passed through several human systems; the extent and intensity of the action produced invariably diminishing, within given limits, in proportion to the number of times the matter has been employed in vaccination. I have repeatedly seen the insertion into a child's arm of vaccine matter taken direct from the cow to be followed, about the fifth or sixth day after the operation, by more or less fever, by painful red streaks running in the direction of the nearest lymphatic glands, by great soreness, swelling, hardness, and redness of the glands of the axilla, and, in some instances, even by the occurrence of several true vaccine vesicles, most usually in the vicinity of the place of vaccination, but sometimes on remote parts of the body also.

There may be other causes of deterioration, besides those referred to, to which the vaccine virus is liable, that have not yet been detected. Among these will be found to be, I suspect, certain diseases of the skin existing in the individual from whom the matter is taken, at the period of vaccination, or during the formation, or in the progress to desiccation of the resulting vesicle.

The second cause I have assigned in explanation of the failure of vaccination as a preventive of smallpox is a deficiency in the extent of the vaccine infection imparted to the system.

The necessity of a certain intensity in the impression made upon the living organism by the insertion of vaccine virus, in order to secure to it perfect and permanent protection from variolous contagion, is established by too large an amount of indisputable facts to permit of its being any longer called in question.

The attempt at adequate vaccine infection may be defeated by the employment of effete virus, or of virus of which the specific qualities have become impaired, or worn out, if I may be allowed to use the expression, by a long series of transmissions through different human subjects.

But there are other sources of incomplete vaccination which have heretofore been in a great measure overlooked. The chief of these is an inaptitude in certain constitutions to the reception of the vaccine infection. The existence of this inaptitude, which may be either partial in extent and temporary in duration, or complete and permanent, will prevent the insertion of even the most active vaccine virus from conferring upon the human organism other than a very imperfect and more or less evanescent protection against the variolous poison. It is a well-known fact that many children cannot be made to undergo the vaccine infection until after the repeated insertion into their arms of matter of which the efficiency had been fully tested upon other subjects. I have known, in several instances, that children, in whom every attempt made to vaccinate them has failed, were very fully exposed, in after life, to the contagion of smallpox, without contracting the disease. One child, in whom vaccination was attempted, by myself and others, eight times, at different intervals, without success, was finally inoculated, by a physician in a neighbouring State, with variolous matter, but without the occurrence of the slightest symptom of smallpox locally or constitutionally. In such cases the inaptitude to vaccine infection is complete and apparently permanent. Most generally, however, the inaptitude is only partial and temporary, enabling the individual to resist, under ordinary circumstances and for a longer or shorter period, the contagion of smallpox; but when exposed to it in the more concentrated and virulent forms under which it presents itself in certain localities and during some of its epidemic visitations, the resistance is not sufficient to repel entirely its influence, and then there occurs either an attack of modified smallpox, or even perhaps of the disease in its unmodified form. In other cases the prophylaxis will continue perfect for a time, but will be finally overcome by repeated exposures to the variolous contagion.

Many experienced vaccinators in Europe deny that by vaccinating at a single spot, so as to produce only a single vaccine vesicle, the system can be placed under the vaccine influence to an extent sufficient to secure it fully and permanently from the contagion of smallpox. They recommend that, in every instance, the vaccine virus be introduced at two, three, or more points, in order to produce as many well-developed vesicles. In the official instructions to vaccinators, issued by the Central Vaccine Board of Great Britain, it is especially enjoined upon the operator to secure in every vaccination from four to five good-sized vesicles. By most of the German vaccinators it is considered, I believe, that at least three separate insertions of virus are necessary in order to secure to the vaccinated the fullest amount of protection from smallpox.

Mr. Simon, in the report of the English General Board of Health, furnishes a series of statistics which would seem to prove most unquestionably that a very strict connection exists between the number and quality of the vaccine cicatrices observed upon the person of an individual, and the protection that has been imparted to him against at least any severe or fatal attack of smallpox.

The following is the result of the observations made by Mr. Simon during a period of twenty-five years, in nearly six thousand cases of smallpox occurring in those who had been vaccinated.

In every hundred cases of smallpox contracted after reputed vaccination, in patients upon whose persons *no vaccine cicatrix* could be detected, twenty-two, or about one-fifth, proved fatal.

In every hundred cases, occurring in those who presented *one well-marked vaccine vesicle,* only four, or one twenty-fifth, died; when, however, the single cicatrix was only slightly marked, the percentage of deaths amounted to twelve.

In every hundred cases, occurring in patients who had *two well-defined vaccine cicatrices,* the number of deaths scarcely amounted to three; but when the two cicatrices were only slightly developed, the percentage of deaths reached as high as seven.

In every hundred cases, occurring in patients who had *three well-defined vaccine cicatrices,* the average mortality fell below two; while in those who had *four or more good cicatrices,* the percentage of deaths from small-pox did not amount to one.

In a series of five hundred revaccinations carefully performed under my own immediate observation, there were eighty-one of the patients who, though reputed to have been vaccinated, presented upon their bodies no trace of a vaccine cicatrix. Seventy-six presented small and very imperfect cicatrices, and and seventy-nine those of a tolerably perfect character; while, in the remaining two hundred and sixty-four, the cicatrices were well defined, presenting all the characteristics of those which result from genuine and successful vaccination. In only ten of the patients did there exist more than one cicatrix. In seven of these there were two, and in three, three cicatrices on each individual. In all of the ten cases the cicatrices were well defined.

Of the eighty-one cases in which no cicatrix was present, the vaccination performed by me succeeded perfectly in all. It could not be distinguished in any respect from that performed in the unprotected. The same thing occurred in thirty-four of the cases where the cicatrices were very obscure and defective, while in the remaining forty-two cases, and in all of the seventy-nine of those with less defective cicatrices, the insertion of matter was followed, about the fourth day, by a vesicle more or less imperfect in appearance, with, for the most part, a faint, small, irregular areola. The crust, which formed by about the ninth or tenth day, though sometimes rather earlier, but seldom much later, was of a dirty yellow or light amber colour, thin and corrugated. In the remaining cases, the attempt at vaccination was followed in a day or two, by some inflammation, a slight, circumscribed, papular elevation, at the apex of which there soon appeared a small collection of whitish pus, which drying, by the end, at the furthest, of the tenth or twelfth day, gave rise to a small, very thin, yellow scab. In some cases all the local phenomena produced by the attempt at vaccination were over by the sixth day. No permanent cicatrix remained. The vaccine matter used by me in the foregoing cases was only five removes from the cow.

The whole of the patients revaccinated as above were under nineteen years of age. The youngest was over ten years, and the oldest eighteen years, five months. The shortest time which was reported to have elapsed from the period of the primary vaccination was over nine years, and the longest eighteen years. No relation was observed to exist between the appearance of the cicatrices on the arm, nor the more or less perfect success of the secondary vaccination, and the age of the patient or the period which had elapsed since the vaccination was said to have been performed.

In view of the many causes by which the attempt at vaccination, in the first instance, may be rendered unsuccessful, or only in part successful, and of the very great difficulty of avoiding most of these causes of failure, even by the utmost caution and foresight, the propriety, if not the absolute necessity of a resort to revaccination demands the earnest consideration of every practitioner. It is, in fact, the only reliable test of the entire success of the first operation; the only means to insure the safety of the patient from an attack of smallpox.

It is believed that in every doubtful case an early resort to a second or even third insertion of vaccine matter, of the purity and activity of which we are well assured, should be insisted upon, in order to complete the infection of the system, if it had not been accomplished by the first operation. Nor should we stop here. The examination of a very extended series of well authenticated statistics has convinced me that, in many cases, the protection attempted to be conferred upon the human organism by the primary vaccination is at best but temporary—and can be rendered permanent only by a second, or, in some few instances, by repeated revaccinations. Hence it would seem to be demanded in all cases, without exception, as a proper precautionary measure, that vaccination be repeated after a proper interval, to insure the complete infection of the system—to endue it with the due amount of protection against the variolous poison.

Were such a course to be invariably and systematically pursued, and, in addition, were general revaccination to be resorted to, and carried thoroughly out, in every instance when smallpox makes its appearance in a city, village, town, or neighbourhood, not only would the spread of the disease be prevented, but the possibility of its future occurrence be very effectually guarded against. Unless such precautionary measures against the occurrence of smallpox are adopted and promptly and faithfully executed in every community, it is impossible to hope for the utter exclusion, now and henceforward, of this loathsome and destructive disease.

Art. V.—*Experimental Investigations to Determine whether the Garden Slug can Live in the Human Stomach.* By J. C. Dalton, M. D., Professor of Physiology and Microscopical Anatomy in the College of Physicians and Surgeons of New York.

Accounts are sometimes met with in the public prints, and occasionally even find their way into the medical journals, of cases in which various cold-blooded animals, especially slugs and lizards, are said to have remained for a considerable time alive in the human stomach or alimentary canal; producing, by their presence, more or less unpleasant symptoms, which disappear on the final discharge of the unnatural visitor. For the most part, these stories are evidently destitute of any real authenticity; but occasionally the accounts are given with such circumstantiality of detail, and on such respectable personal authority, as fairly to subject the medical man, who refuses his belief, to the charge of careless or presumptuous incredulity. Two such cases have recently come under my observation.

In the first of these instances a gentleman brought to me, in a bottle of spirit, a mass which had the appearance of a very thick, fat leech, about two inches in length—evidently some organized structure of an animal nature, which, he said, had been discharged, in a living state, from the intestines of a patient suffering from a temporary affection of the bowels. On closer examination of the mass, it turned out to be a species of *Limax*, or "slug," apparently *Limax flavus*, which is tolerably common in the gardens about New York. According to my informant, the patient had taken an injection per anum, for the intestinal difficulty under which he was labouring, and immediately afterward something attracted his attention by moving about under his clothes. On making search he found the animal in question, apparently just discharged from the anus. The man was entirely positive in his belief that the animal had really been evacuated from the rectum, and attributed its presence in the intestine to the fact that he had previously been in the habit of drinking lake water, and supposed that either the animal itself, or the egg from which it was produced, had thus been introduced into the alimentary canal.

The gentleman who brought me the specimen was very unwilling to believe that it had not been actually discharged from the intestine, as the patient supposed. I was, however, disposed to give a different explanation of the affair. The slug could not, in any case, have been introduced into the stomach with "lake-water," according to the patient's theory, since these animals are not aquatic but terrestrial in their habits. They are cold-blooded, air-breathing mollusks, living and feeding upon green vegetables, principally cabbages and lettuce, upon the leaves of which they are sometimes to be found when gathered. Now, the patient, in this case, was porter in a hotel, and was often engaged in bringing vegetables, such as cabbage, lettuce, parsley and the like, from the market to the hotel. It seemed most likely that the slug had been brought into the house by the patient with some of these vegetables, and had then been accidentally introduced into his clothing a short time before its discovery.

The second case was still more striking. A rather large and very perfect specimen of the slug, preserved in spirit, was brought to me by a gentleman engaged in the study of medicine, who stated that it was one of two which were said to have been passed, alive, a few days previously, from the intestine of a child. I subsequently went to see the mother of the child, and obtained her own account of the case. She was a woman of about forty-five years, the mother of several children, and very intelligent and clear headed in her manner and language. The child, from whom the slugs were said to have been passed, was a healthy boy, nearly two years of age. He had passed a part of the summer, with the rest of the family, in the country, but had been again living in the city for two months before the occurrence in question. He had been ailing for about three weeks, and for a fortnight had suffered from considerable debility, want of appetite, and moderate diarrhœa. It was during this diarrhœa that the slugs were passed. On that day the mother, on removing the cloths from the child, after a fecal evacuation, found among them one of the animals, alive and moving. She immediately took it to a neighbouring apothecary, and on returning, after an absence of fifteen minutes, found that the child had had a second evacuation, on the floor of the room, and that there was another slug on, or quite near, the feces, also alive and moving, and similar in every respect to the first. She described perfectly the four "horns" of the animal, protruding from the head, and stated that the second slug crawled a considerable distance over the uncarpeted floor of the room, before she picked it up. The child recovered from its diarrhœa in about a week after this time, and since then had remained perfectly well.

The mother's statements were made in a perfectly distinct and connected manner, and she evidently had not the least doubt that both slugs had been actually passed from the child's intestine. She said, in reply to my inquiries, that while in the country her children had access to green food, but that since returning to the city she had never given them any uncooked green vegetables, excepting cabbage, which she always pickled for at least a week before using. She was convinced that the child had probably swallowed the animals inadvertently, with green food, while in the country, and that they had remained in the alimentary canal for the subsequent two months, giving rise to the diarrhœa, and other unpleasant symptoms, which subsided after their discharge.

But there are many difficulties in the way of admitting this explanation. If really taken into the stomach two months before, the slugs must, in all probability, have been at that time very young, or even still in the egg, since it is extremely unlikely that animals of so large a size (from one to two inches in length) should be swallowed inadvertently, or without being fatally injured by mastication. We must, therefore, believe that they not only continued alive in the intestine during this period, but that they also grew, perhaps were even hatched from the egg, and attained their full maturity in this unnatural situation.

Furthermore the slug, as I have already remarked, is a cold-blooded animal, and to most of these species the temperature of the human body (100° F.) is soon fatal.

Thirdly, its body is soft, and apparently easy of digestion. This is the case with all the molluscous animals used as food, as, for example, the oyster, which is often taken alive and uncooked, and in this condition is very easily digested.

Fourthly, the slug is an air-breathing animal, and, on this account alone, not likely to survive, if confined for any length of time in the stomach or intestine.

But notwithstanding these difficulties, it was impossible to listen to the circumstantial and straightforward account of the above case given by the child's mother, without having my incredulity at least somewhat shaken, and I accordingly thought it worth while to institute some experiments, with a view of ascertaining how far such a thing might be possible.

Accordingly I obtained a number of garden slugs (*Limax agrestis*) from an old lettuce bed in the neighbourhood of the city, and administered them to dogs in the following manner. The slugs were fully alive and active when given. The dog's mouth was held open by an assistant, the slug placed far back in the fauces, and then allowed to pass down the œsophagus by the movements of deglutition, care being taken to prevent its being injured in any way, by the movements of mastication or otherwise. Immediately afterward the dog was fed with a few mouthfuls of fresh meat, to secure the deglutition of the whole.

Expt. I. Two slugs were administered to a dog as above, and the animal killed at the end of twenty-four hours. The entire length of the alimentary canal was thoroughly examined, but no trace of the slugs was anywhere to be found.

Expt. II. Four slugs were administered to a dog, and the animal killed at the end of one hour. No recognizable traces of the slugs were to be found in the œsophagus, stomach, or any part of the small intestine.

Expt. III. Four slugs were administered to a dog, and the animal killed at the end of fifteen minutes. All four slugs were found in the stomach, perfectly dead, and already somewhat softened at their anterior extremity.

Expt. IV. Four slugs were placed in gastric juice of the dog (obtained by means of a gastric fistula) at the temperature of 100° F. At the end of nine and a half minutes all four were completely dead and motionless. They were then allowed to remain in the gastric juice, at the same temperature, with occasional gentle agitation. In two hours they were evidently softening, and beginning to be digested; and at the end of five hours, their bodies were thoroughly disintegrated, and reduced to an undistinguishable mass of softened fragments.

These experiments show that, in the stomach of the dog, the slug can survive only a very few moments, and that it is afterward rapidly digested in the gastric fluids. Of course we cannot conclude, with absolute certainty, that the same thing is true for the human subject; but the known resemblance in constitution and properties between the human gastric juice and that of the dog, and the essential similarity of the digestive process in both, are sufficient to produce all reasonable conviction that the result in the two cases would be the same. I have no hesitation, therefore, in concluding that slugs cannot remain alive in the human stomach, any more than in that of the dog; and that all reported cases like the above, however authentic and apparently trustworthy, are simply instances of mistaken or imperfect observation. In all probability, the slugs, in the second case related above, as well as in the first, were brought into the house with fresh vegetables, and then accidentally placed where they were afterward found, without ever having been taken into the stomach at all.

In order to determine how far the elevated temperature of the human body might, of itself, prove injurious to the slugs, I tried the following experiment:—

Expt. V. A living slug was immersed in pure water, kept at the temperature of 100° F. It remained alive for something over thirty minutes; but at the end of an hour it was dead—past recovery.

The following was tried, in order to ascertain what effect the simple privation of air would have upon these animals:—

Expt. VI. A slug was immersed in water at the temperature of 70° F., in such a manner that it could not reach the air. At the end of half an hour it had become very torpid. In an hour and a half it was nearly or quite motionless; but, on being removed from the water, immediately began to open its breathing hole and extend the head and neck. At the end of five hours there were still signs of life, on removing the slug from the water, though less distinctly manifested than before.

At the end of twenty-four hours it was completely dead.

As we not unfrequently meet with accounts of *water-lizards* being swallowed and retained alive in the stomach for a considerable period, the following experiment was tried, as part of the above series:—

Expt. VII. Two living water-lizards (*Triton millepunctatus*) were administered, in the manner above described, to a young dog. At the end of fifteen minutes the dog was killed. Both lizards were found in the stomach, perfectly dead, exceedingly soft and flaccid, and evidently about to undergo the digestive process.

Although these experiments are in opposition to the truth of the stories which they were designed to investigate, yet I think their actual results hardly less remarkable and interesting than if they had turned out differently. It is a curious psychological phenomenon to witness the thorough confidence, the evident good faith, and the fulness of detail with which intelligent persons will sometimes relate these stories; especially when we remember that the main point of interest in their statements is found, on investigation, to be utterly incredible. When the accounts come to us at second hand, we can always make abundant allowance for the natural growth of wonders, in passing from mouth to mouth. But even when the facts stated are those which came under the relator's own observation, the discrepancy between his convictions and the truth may sometimes be equally remarkable.

ART. VI.—*Cerebro-spinal Congestive Fever or Spotted Fever.* By ROBERT BURNS, M. D., of Frankford, Philada. (Read before the Philadelphia County Medical Society, Sept. 14, 1864.)

A FORM of fever, popularly denominated spotted fever, has been exceedingly prevalent during the years 1862, '63, and '64, in the northeastern section of Pennsylvania, and parts of New Jersey, more particularly in and around Philadelphia; as, for instance, at Manayunk and Norristown on the Schuylkill, Frankford, Bridesburg, and Trenton, on the Delaware River. This fever excited much alarm from its novelty, suddenness of attack, and fatality; its name likewise produced terror in the public mind, associating it with some fearful plague.

The writer, having had the care of a number of cases of this disease, will endeavour, however imperfectly, to contribute to the common stock such observations as he made in the treatment of the disease, regretting the want of minute notes of all the cases. One decided and well-marked case was, however, noted, which will serve, in the general, as a type of the others. Should the arrangement of the description not be as concise and methodical as it might be, he hopes it will be excused, as the only time unoccupied to devote to writing purposes is when both body and mind seek the refreshment of balmy sleep.

The first point requiring consideration is the hygienic condition of the dwellings and the locality in which patients reside, as there may be influences therein which, in some degree, cause or control the phenomena of disease.

CASE I. Mrs. Sarah T——, aged about thirty-six years, a strong healthy woman, the mother of several equally healthy children; Irish by birth; resides in a frame dwelling built, without a cellar, upon a lot of ground four miles from Philadelphia; it fronts upon a public thoroughfare on the southeast; on the southwest is a lane, with very imperfect drainage, leaving at all times in its deep gutters stagnant water; on the southwest is a hog-pen and other out-buildings; on the northeast is an open commons, on which side are no windows. The front room on the ground floor is occupied as a grocery and vegetable store; adjoining this is the only other apartment below, which serves the purposes of kitchen and general sitting-room, which a large stove for cooking renders very hot, even in midwinter. In this room the patient was washing on the 17th of March, 1864, and being actively engaged throughout the day, in the evening she felt unusually tired, with severe pains in the lower extremities passing all over the body; during the night she became very sick at the stomach, with vomiting, which continued until the next day, the 18th, accompanied with severe chills. She continued to grow worse and worse, when medical aid was sought. On arriving, about 5 o'clock P. M., she was found in the following condition—lying upon a settee, extremely cold, of a cadaverous appearance, features shrunken, sordes on teeth, totally unconscious; could not be aroused or made in any way to respond to agitation or words except by distressed moaning. On examination, the pulse was barely perceptible, and could not be numbered; the face, neck, and arms, were thickly covered with a livid or leaden-coloured eruption resembling the congestive form of rubeola. The case was diagnosed as one of the so-called spotted fever, which had been prevailing for some time. On examining the thorax by auscultation, the heart was normal in its sounds, active, but oppressed and laboured in its action. The whole appearance of the patient indicated sudden dissolution. What was to be done? A strong woman, less than twenty-four hours sick, sinking into death, with no ability to take any stimulant per oram, and no means at hand to introduce remedies per rectum; promptitude of action was positively demanded; frictions and sinapisms were ordered; but to rely upon these entirely was only to procrastinate and hazard life by loss of time. To liberate the circulation, from what I conceived to be a congested condition, by venesection was the only plan that could be devised under the circumstances; and, hazardous as the remedy might seem, I resolved to open a vein in the arm, carefully observing its effects. This was immediately done; the blood flowed slowly, thick and of a dark colour, for some time, merely per guttatim; it was allowed to flow on, assiduously using upward friction along the course of the vein; in from fifteen to twenty minutes the flow became freer and almost a projecting stream from the orifice; about sixteen ounces being obtained, this was deemed satisfactory, and the result was anxiously watched. In half an hour the pulse became distinct, but very feeble; in half an hour more it could be counted, when it numbered 100 per minute. Thus far being encouraged, sinapisms were ordered to be extensively applied to various parts of the body, warmth to the feet, and friction with turpentine and brandy to the extremities; strong brandy punch was likewise ordered to be given freely whenever she was able to swallow it. Leaving these directions to be strictly carried out, she was again visited at half past 10 o'clock P. M., when her colour was found better, countenance more natural, hands naturally folded together, heat improved, breathing easy, pulse more free, still unable to speak or swallow. The following mixture was prescribed and ordered to be given through the night, as soon as she recovered sufficiently to take it, viz.: R. Liquor.'ammoniæ acetatis, misturæ camphoræ, āā ℥ij, spt. eth. nit. ʒss. M. Sig.—A tablespoonful hourly in sweetened water.

On the next day (the 19th) about noon, being prevented from visiting her earlier, she was in bed. On entering the room, she called me by name, was able to converse distinctly and understandingly about the attack, and her sensations generally, but knew nothing of my presence or of bleeding her on the previous evening.

The pulse was now liberated, quite distinct, and numbered 88. She had taken her medicine and some gruel; the eruption had faded, but still the skin was mottled and of a brighter colour; her head was painful and confused. 9 o'clock P. M. reaction strong, colour of skin quite red, heat feverish, veins full and prominent, pulse 100; able to converse freely.

On the 20th (3d day), 7 o'clock A. M.; found her pallid, distressed, anxious, restless, pulse weaker, universal soreness particularly of the head, neck, and limbs. Ordered six Spanish leeches to the temples, the medicine, brandy, and frictions to be continued. 5 o'clock P. M. Head much relieved; said the leeches had done her a great deal of good; skin warmer, pulse better, but complained of universal soreness.

March 21*st* (4th day), noon. Skin warm, pulse 88, free; the tongue heavily coated, sordes on teeth, lips thickly covered with fever blisters similar to what is observed in intermittent fever; the face covered with large blotches which were also on other parts; face yellowish, eyes inebriated and red; breath a sickening bilious odour; no fever, drowsy, bowels constipated. Ordered a dose of castor oil, and continued the spt. of mindererus mixture with pulv. ipecac gr. ijss, calomel ij grs. every three hours; continue the frictions over the extremities. The eruption continues distinct over the face, arms, and legs.

11 o'clock P. M. Sleeping quietly; skin comfortable: the oil has not operated; repeat ℥i; pulse 88, free and active. Being in a quiet state, did not disturb her.

22*d* (5th day), 10 o'clock P. M. Has been comfortable, however much pain with some swelling of the wrists and ankles; the medicine has operated, stools black resembling charcoal, tongue heavily coated, sordes on teeth; the eruption around the mouth drying; intellect good, disposed to drowsiness, pulse 120; this unusual and rapid increase of pulse doubtless occasioned by the sudden death of her youngest child, which agitated her exceedingly. Ordered the following pills: ℞ Mass. hydrargyri, ext. colocynth. comp., āā gr. xxiv, ext. aloes gr. xii, saponis gr. vi. M. ft. pilul. No. xii. Signa.—One to be taken morning, noon, and night.

23*d* (6th day), noon. Has had a good night; no pain other than as yesterday; still drowsy, but wakes up without confusion or wandering; there is some deafness, has taken gruel with more appetite.

25*th* (8th day). Doing favourably, intelligence good; she complains very much of pains in her limbs and cannot bear the least movement; pulse 120, tongue cleaning, skin feverish, bowels frequently moved by the pills, of a dark-greenish highly bilious colour. Ordered the following: ℞ Pulv. ipecac. comp. ʒi, calomel gr. vi, sacchari ʒss. M. ft. pulv. No. xii. Signa.—One to be taken every four hours. Frictions with hot salt and water over the extremities three times a day.

26*th* (9th day). Much better; bowels have been moved three times, stools of a yellowish-green colour; tongue cleaning, sores around the mouth drying away; pains much better; countenance more animated; eyes clearer, converses freely and accurately; pulse 100; takes food with but indifferent appetite. Continue the pills with chamomile tea three times a day as a gentle tonic.

28*th* (11th day). Not so well, pulse very rapid, 160, bowels open;

ordered sulph. quinia gr. ii every hour, with good wine, beef tea, or mutton broth. 10½ o'clock P. M., much the same, a little stronger.

29th (12th day). Better, pulse 100, bowels relaxed; continue same treatment with farinaceous drinks of rice or barley water, to which may be added lemon-juice.

30th (13th day) to April 3 (16th day). She has continued to have fever, and by some exposure contracted pneumonia of the right lung, attended with much troublesome cough, for which she was ordered to be freely blistered; the pains of the limbs are somewhat diminished; pulse 120, bowels free, tongue cleaning and moister, appetite improving.

April 4 (17th day) to the 10th (23d day). She has been slowly improving, tongue cleaning, bowels natural in colour and free; her general appearance is better, excessive perspirations, cough better, appetite poor; ordered sulph. quiniæ gr. ii every two hours, wine or brandy with beef tea to be given very frequently.

11th and *12th* (25th day). Continues much the same. 8½ P. M., sent for this evening and found that, after indulging too much in eating, she had violent fever followed by excessive perspiration; at the time of my visit she was better. Skin was moderately cool and moist, has taken, during the day, sixteen grains of quinia; ordered it to be continued during the night until twenty-four grains should in all be taken, and early next morning a dose of castor oil.

13th (26th day). Oil has operated very freely; the quinia has been taken as directed; there is now no perspiration or fever; skin cool, pulse calm, tongue clean, but rather red and glassy; limbs less swollen, appetite still poor; the cough continues very troublesome, for which the following prescription was ordered: ℞ Syr. scillæ, syr. senegæ, spt. eth. nit., āā ℥ss, tinct. benzoin comp. ʒii, acetat. morphiæ gr. ii, mucil. gum acacia q. s. To make a ℥vi mixture, of which a tablespoonful to be given every two hours.

14th to the *16th* (29th day) inclusive. Better, fever nearly gone, but on the 17th (30th day), it returned, for which the sulph. quinia was ordered as before; on the 19th (31st day), found her upon the whole better, complains much of headache, for which her head was ordered to be shaved and a blister to be applied to the occiput, which was immediately done, while cold applications were kept constantly over the top of the head; the pulse is now 100, skin comfortable, tongue more moist, paler, and less swollen, bowels are freely open; has taken considerable food; still she inclines to be drowsy.

May 1, (43d day). She slowly improves; is much emaciated; limbs flexed, stiff, and extended with much difficulty and pain; the mind and body both very weak; she is able to sit up; the appetite is good, takes nutriment and wine freely; bowels are regular, speech very imperfect, pulse weak, skin cool; no fever, urine dark and scanty; ordered the following prescription: ℞ Spt. terebinth. ʒii, tinct. cinchon. comp. ℥i, tinct. lavand. comp. ℥ss, pulv. g. acacia et sacchari āā ℥ss, aq. camphor. ℥ivss. M ft. mistura. Sig.—A tablespoonful every two hours.

5th (47th day). Improving; continue the mixture. Her intelligence is very vague and her countenance quite idiotic; the pains in the lower extremities are occasionally severe, with a disposition to keep them in a flexed position, objecting very much to have them extended.

16th (58th day). Improving and considered out of danger; appetite good, bowels regular, mental powers improving. There is much emaciation of body with a putty-coloured complexion, stiffness of knees and wrists, bedsores troublesome, which arose from a want of careful nursing, which throughout the whole period was very deficient.

She was ordered to take a strong infusion of cinchona bark and the pulverized bark to be used to dress the bedsores. Here notes of the case were discontinued, there being nothing of special moment to record during her convalescence; tonics and nutriment were all that were requisite to aid the *vis medicatrix naturæ.*

August 30. Five months and thirteen days from the day of the attack I called on her and found her attending to her household duties and store in a tolerably good state of health, although thin with feebleness of limbs. She remembers but little of her long and painful illness; her appetite is good and bowels acting regularly; the lungs are good, the heart and circulation weak but normal; it may here be noted that the hair in this, as well as in all the other cases of this disease which I attended, was perfectly retained.

A number of other cases might be here described, but lest it should become too tedious I will merely epitomize a few of them.

Case II. Mrs. Nancy F——, in the sixth month of gestation with her fifth child, residing in the neighbourhood of the foregoing case in a brick dwelling, very damp, and having water in the cellar; her illness continued about the same period; she was threatened with premature labour at the seventh month but went to the full time. This case was complicated in the latter stages with the most aggravated diarrhœa and abscess of the right ovarium opening externally. She had eruptions on the face and around the mouth, but not petechia; severe pains in the head, spine, and joints, with chills, fever, and excessive perspirations; her liver, as in Case No. 1, was exceedingly deranged; she was safely delivered of a delicate child, which died in its fourth month of diarrhœa; the ultimate recovery of the mother was tedious but good; in this case leeches were freely used to combat local affections of the brain, ovarium, and intestines.

Case III. Mrs. F——a, at an earlier period than the other cases, was also about the sixth month of gestation with her first child; she, likewise, presented similar symptoms. Chills, fever, perspirations, headache, and vomiting, eruptions, as in No. 2, severe pains in the head, neck, and spine, with rigid stiffness, also pains in the joints and uterus, which latter had induced labour so far as to admit of the child's head being touched, on examination per vaginam; she, however, went to the full period, and was confined after convalescence when from home with her friends. This child was constantly sick, and died of pulmonary catarrh in its tenth month; the residence of this patient was, likewise, in a low wet location; previous to her attack she had exposed and exerted herself, assisting to nurse several fatal cases of the disease about one hundred and fifty feet in the rear of her house. Recovery in this case was good, after an illness of about six weeks. She was leeched several times on the temples and behind the ears, had mercurial cathartics, stimulants, and quinia.

Case IV. John F——t, brother to No. 2, was much with his sister; had the same symptoms in a less severe form; less eruption; pains in head, spine, and extremities, with much rigidity; delirium more than the other cases, but relieved by free leeching. He recovered entirely in three weeks.

Case V. Mrs. O——t had returned from visiting her son, who was in the army of the Potomac. She remained with him over a week, living and sleeping in the camp. Shortly after her return home she was seized with vertigo, pain and tightness about the head, stiffness of the neck, severe pains in the spine and joints. Being corpulent and in danger of apoplexy or congestion of the brain threatening to life, she was freely bled. Immediately after this the face, neck, and greater portion of the body was covered with a bright-coloured eruption like rubeola, which without this means might have been petechiæ. In a few days the eruption disappeared, and under the influence of mercurial catharsis, diaphoretics, and quinia she soon and safely recovered.

Case VI. Ramsey, a young man 16 years of age, was seized with headache, pains in the spine and extremities, delirium, fever; no eruption. Leeches were freely applied to the head, sinapisms to the spine, mercurial purgatives, diaphoretics, stimulating embrocations to the limbs, quinia freely when fever was subdued. This case continued about four weeks. Recovery good.

Case VII. Lizzie C——r, aged over two years, was a remarkably severe case; the brain and spine were more affected than in any one of the others. For two weeks both day and night she screamed incessantly, and continued in tetanic spasms, tossing the arms over the head, drinking in a spasmodic manner, the act of swallowing invariably producing a convulsive movement with the spine curved as in opisthotonos; the tongue was in constant movement; the bowels were exceedingly torpid, and when evacuations were procured they were of a dark clay colour, sometimes blackish, then dark green, of a heavy offensive odour. This child required and had constant attention both day and night. Three times the head was leeched freely, sinapisms and frictions to the spine, with chloroform, tinct. saponis et opii, to which aqua ammoniæ was sometimes added; blisters behind the ears were necessary, and found beneficial; hot mustard baths and cold applications to the head; the internal remedies were small and frequent doses of calomel and ipecacuanha, a solution of ext. of belladonna, under the influence of which she was kept as much as possible, watching carefully its effects. Wine whey and brandy punch, beef-tea and arrowroot, were the principal nourishments; the bowels were moved by castor oil and turpentine injections combined, to which was added lac assafœtida, occasionally as could be given a dose of castor oil. This child began to recover in about three weeks, but convalescence was slow; it was long before speech and the use of both the upper and lower extremities returned. She seemed to be universally paralyzed, and it was feared her intellectual powers would be seriously affected. Under, however, the use of quinia and comp. tincture of cinchona she gradually improved, and is now, after a period of six months, a healthy, active child. She is rather pallid, and not quite so animated as before the attack. During her recovery there were several abscesses on different parts of the body, more particularly on the head and back.

Case VIII. Lizzie S——s was somewhat similar but a much milder case. The head, spine, and liver were likewise affected, with much screaming and restlessness. She also was leeched on the temples and had dry cups to the spine, which latter had a charming effect in quieting the extreme restlessness and spinal irritation. This child had small vibices and abscesses subsequently, and although naturally of a delicate constitution, had a good recovery.

Case IX. Lightfoot, a boy five or six years old; and

Case X. A child, three years, were both seized with convulsions before they had any proper medical treatment. Livid petechiæ were observed on the face of the former. They were both leeched, but without benefit. Both died.

Case XI. G. F. W——th was the case of a well known and wealthy business man of Philadelphia, and resident of Frankford. He had been reduced by excessive pain from a diseased prostate gland, and had just come under the treatment of Dr. Pancoast and myself, during which he was seized suddenly with violent headache, inability to move, general soreness, chills, fever, and excessive perspirations, constipation, by which he sank in two or three days. From the various symptoms above mentioned, accompanied with the same eruption around the mouth as mentioned above, the case was diagnosed as one of this peculiar fever.

Case XII. Was that of the writer. During attendance on some of the before mentioned cases in April last, he became quite unwell with headache and severe pains along the spine and every joint of the body, which caused constant restlessness, weight and oppression about the chest, constipation and a languid feeling pervading the whole system; fearing a severe or tedious illness, I took the following: ℞.—Mass hydrargyri gr. x, ext. aloes gr. iij, ext. hyoscyami gr. ij, saponis gr. i. M. ft. pil. no. iii, followed by a large dose of sub. cit. magnesiæ. These operated freely, after which ʒss of the sulph. quinia was taken in two doses. This treatment arrested the disorder, and in two or three days the unpleasant symptoms had entirely gone.

These are some of the cases of the disease called *spotted fever*, a term which the writer considers inapplicable to it, as very many of them were not marked with this peculiarity, but all of them bore evidence of blood-poison at one period or other during their progress, by the presence of either petechia, vibices, boils, abscesses, blotches, or other exanthematous development. The foregoing cases all occurred in the spring of 1864, with the exception of Case III., which was in the previous year. There are still some traces of the disease in modified forms, which have been observable in children, particularly during the present summer, taking in some degree the place of the ordinary cholera infantum.

In conclusion, so far as my limited observation extended, the following may be summed up as the prominent symptoms of the disease: Severe headache, suddenness of attack, pains and stiffness of the joints and spine, in some a rigidity so great that in raising the patient forward the vertebræ would not move, but the patient had to be elevated as if one solid piece; in general not much delirium; fever irregularly intermitting; occasional chills and excessive perspirations, but these were not in regular stages as in purely intermittent fever; precordial oppression; sometimes slight pneumonia; generally constipation; very vitiated alvine discharges; urine dark and generally thick; vomiting seldom; intellect not so confused as in typhoid fever, nor the deafness of that disease; extremities inclining to be cold; sleeplessness and wakeful sensibility to suffering; no inclination for food, and not much craving for drink; tongue dry and coated, but not swollen, neither was it observed to be smooth or glossy; eruptions sometimes at the commencement, but always more or less before complete recovery. Convalescence slow; much emaciation; nervous system continued long weak; no permanent or unfavourable sequelæ were observed.

The treatment pursued was the early abstraction of blood generally or locally, according to circumstances, to relieve the brain and spine. Stimulating frictions to the whole spinal column and extremities. Warmth to the feet, with sinapisms to different parts to cause counter-irritation. Blisters sometimes, but seldom necessary. Stimulants. Diaphoretics when feverish. The liver and bowels steadily acted on by mercurial purgatives at night, and castor oil next morning, and as soon as the violence of the symptoms abated, quinia freely administered to the amount of eight or ten grains per day for the first three or four days; this, however, to be varied according to circumstances. The nourishments chiefly beef-tea or essence, barley gruel, sago, and such articles of a similar kind as best suited the desire or inclination of the patient.

Of necessity the treatment required to be varied according to the state of the case, but the foregoing embraces the general points of treatment pursued by me in the management of this disease, which seemed, so far as my observation enabled me to judge *a cerebro-spinal congestive fever.*

FRANKFORD, September 11, 1864.

ART. VII.—*Cerebro-Spinal Meningitis as it occurred in Licking County, Ohio.* By J. R. BLACK, M.D., Newark, Ohio.

IN common with other sections of country, a severe, unusual, and fatal form of disease has had a limited prevalence in the county of Licking. Some of the cases that came under my care seemed anomalous and instructive, and may serve to indicate a clew to the precise nature of the inflammation that has, apparently, been little influenced by treatment, and found so destructive to life by its action upon the nervous centres. There seems to be a relation, if not identity, between what is known as cerebro-spinal meningitis, and spotted fever. In fact, reliable observers regard the latter as only a more severe grade of the former, in which there is a more intensified and destructive metamorphosis of the blood. Dr. Dunbar, of

Cambridge, Ohio, where spotted fever prevailed eighteen months ago to an alarming degree, informs me that the invasion of the nervous centres was invariable, while the disease in some ran its career without any petechiæ being manifest upon the surface, while in others they were only observed after death. From this it would appear that the nervous involvement is more pathognomonic than the blood extravasation, and that the latter may be regarded, only, as ocular evidence of blood degeneration from the presence of a zymotic agent whose chief, and perhaps primary, force is spent upon the cerebro-spinal axis. That this affection differs from ordinary traumatic and sthenic inflammation of the nervous centres, I entertain not the slightest doubt. The early and free perspirations, the marked blood derangement, the results of treatment, the rapidity of *post-mortem* decomposition, the generalizations of clinical observation, all conspire in fixing this idea upon the mind. It is quite possible that other observers may not have seen as peculiar a series of morbid phenomena appertaining to this disease as the writer, and therefore may not agree with his conclusions; but for the purposes of comparison of enlarged and true generalizations clinical facts from every source are obviously essential, provided only, that they are accurately noted and correctly interpreted. More and more does the true physician feel this need. From what has been seen, the mind often begins to feel at rest in regard to the nature and treatment of a disease until a new series of phenomena completely upset his faith, or shed a flood of light on what was before uncertain and obscure.

Before relating the cases deemed specially instructive, I may remark that cerebro-spinal meningitis prevailed, to some extent, in the regiment to which I was attached (viz., 113th Ohio V. I.), in the year 1862. While embarking on a steamer at Louisville, Ky., in the month of February, the first example occurred. The symptoms were rapid and violent—death taking place in about fifty hours. Ordinary antiphlogistic treatment, for what appeared to be a phlogistic disease, did not seem to exercise the slightest curative influence. Some twelve or fifteen instances in all came under my care, not one of whom were saved, although some of them were the athletes of the regiment. Among the last treated,. I resorted to large doses of aconite as a nervous sedative; but it, like preceding agents, seemed wholly inoperative. The leading symptoms of these cases were: a small, and not usually rapid pulse; sordific tongue, coma, and opisthotonos. From other surgeons of the Army of the Cumberland I learnt that like examples had come under their care, and with like results.

CASE I. *Nov.* 30, 1863. Called to see Mr. Duckworth, æt. 46, farmer, of good constitution; habits somewhat intemperate. Had been taken with a severe chill on the 27th, of considerable duration, succeeded by a high fever, and well-marked delirium. Remittent chills of a slighter grade had followed, with fever and free perspiration. Cathartics had been given, with diaphoretic teas.

Expression calm, face flushed, skin moist; had been in a free perspiration all night; tongue moist and nearly clean; intense thirst; mind rational; pulse 142. Complains of soreness throughout whole body, as if he had been beaten, with darting pains along the extremities. Sees spectra; and wife says that through the night there is aberration of the thoughts every now and then, although otherwise perfectly quiet. As bowels had been well opened, and the true nature of the case in doubt, he was put upon an expectant plan—that of small doses of ipecac and chlorate potassa.

Dec. 1. No improvement. Complains of being chilled on least exposure of the body. Did not sleep, nor indeed had since date of illness. Morphia added to prescription.

2*d.* Still no better. Morphia procured some short slumbers. Not the least desire for food, but thirst continues. The perspiration of past night very profuse, wetting through nearly all of the bedding. There is great soreness, amounting to tenderness over the limbs; and on the inside of left knee, a little above the joint, a diffuse intumescence has made its appearance, with a faint blush of red upon its surface. There is a similar, though smaller intumescence also upon the forearm, just above the wrist-joint, on the right side. The pain on these spots is almost intolerable, and the slightest pressure or motion of them cannot be borne. As bowels were torpid, a cathartic of Rochelle salts was ordered, followed by morphia, quinia, and iodide potash. Camphorated oil to the local disease.

3*d.* Perspiration continues nearly all the time. Pulse lower and more feeble; had some rest during night; appears quieter, and less disposed to talk; skin moist and slightly cool; eats nothing. The swelling on each limb is gaining in size and extent. Treatment continued.

4*th.* Head drawn back; does not seem rational; talks in whispers; pulse almost imperceptible at the wrist; evidently sinking rapidly. The intumescence gradually increasing, and the enlarged veins can be readily traced upon its surface. Died at 12 M.

CASE II. Two nights prior to the death of this patient was called in consultation with Dr. Vail to see a neighbour of the first, who was said to be similarly affected. He was taken ill on the same day, in much the same manner, and, to my surprise, presented almost identical symptoms. Like Mr. D., the intumescence was symmetrical, though on opposite limbs. Had the same pain and extreme sensitiveness, and presented the same external appearance. The main difference lay in the more marked delirium, and the greater extent of the swelling which extended from the knee to the foot. The treatment had been alterative and rigidly antiphlogistic. He was evidently dying; and expired in about eight hours, to the surprise of all his friends.

CASE III. Was called, Jan. 28, 1864, in consultation with Dr. Cutting, of Hebron, to see Mrs. B., æt. 68, widow, of excellent constitution, and mother of six children. Had been seized with a chill and fever, with intense aching in the whole body; darting pains through the limbs, but more especially on the inside of right knee-joint, and just above the wrist on left arm. A gradual enlargement of these places soon became apparent, and at time of my first visit (third day of illness) were each about the size of the open hand. They were slightly red, extremely tender, and gave agonizing pain on the slightest motion. Mind confused, but rational; had had no rest, except from opiates; and had been freely purged with calomel and jalap. No appetite; pulse 98; skin slightly dry, though often moist; tongue slightly coated, but not dry; thirst intense; urine natural. Tr. ferri murias, with sulph. cinchonia, was agreed upon as to treatment, with tepid lotion to the affected parts, containing some laudanum. Under this treatment the disease slowly abated, and it was gratifying to observe that the tumefaction did not increase after a few hours' use of the above lotion. But this may open to the *post hoc ergo propter hoc* mode of reasoning.

CASE IV. Mrs. B., æt. 31, mother of five children, and in fourth month of sixth pregnancy, of good constitution, was taken with a prolonged chill, severe aching over whole body, and parturient pains. On afternoon of same day had second chill, not so severe as first, succeeded by very high fever and an increase of pain. During the night she aborted. The fœtus appeared natural, the secundines passing without difficulty, or hemorrhage. On the next day an intolerable aching pain in left shoulder-joint, with a growing enlargement, made their appearance. It was deeply located, and slight relief was afforded by constant friction over its surface. Soon, either from this or the stimulating anodyne applications, a tenderness and blush of redness were produced upon the skin. The enlargement steadily grew, and powerful anodynes, locally and generally, gave only partial relief to the intense suffering. On second night it was so aggravated that Drs. Wilson and Ballou were sent for in consultation. Large doses of morphia, and water with some spts. camphor locally, served to lull its violence. Ipecac and calomel were also regularly administered. By the fifth day, or second of this treatment, the violence of the disease was masked, but otherwise no change for the better could be detected. On the contrary, the intumescence gradually spread along the deltoid, and extended over the scapula. The thirst intense; tongue dry, lightly furred; skin rather hot and dry, though easily excited to diaphoresis—which was not the case in health. Secretion of kidneys remarkably free; lochia seemingly natural; no tenderness over the abdomen. Could not bear the slightest pressure over the shoulder, and the least motion gave the greatest agony. Pulse 120. On the sixth night began to complain of the head, desiring to have it constantly pressed. The fitful sleep was broken, she became more restless, and by day turned over for the first time and lay upon the affected member. On examination of the shoulder the swelling, heat, and pain had each measurably subsided. In short, metastasis to the brain was the appalling result. The intellect was more clouded; but, by an effort, rational answers could be obtained. The head, in about twenty hours more, became retracted, she frequently put her hand to the nape, and complained as much of her back as head. Restlessness became extreme; putting out her arms, to be turned every five minutes, which had to be done with the greatest care, for the least twisting of the spinal column made her scream with agony. Light and sound gave great uneasiness. Sordes began to form on the teeth, the tongue got drier, and the pulse came down to 98. Blister to the nape, sinapisms to the feet, tepid water to the head, and internally same medicines as above. On the eighth day the symptoms more aggravated; the retraction of the head painful to see; deglutition difficult; very restless, except when under influence of heavy opiates. Mind more clouded and almost unconscious. Urinary excretion yet free. That night Dr. Hildreth, of Zanesville, in consultation. Found the lately affected shoulder emphysematous, with purulent indications; though, on exploration, none was found. Permanganate potassa, gr. ss every 3 hours, with extension of blister along the spinal column. But deglutition was so difficult that only two doses could be administered. Coma became more profound, the struggle of vital force became more and more feeble, till, on the morning of tenth day, she breathed her last.

The two following cases were seen in consultation with Dr. Ewing, of Hebron:—

CASE V. Isaac B., æt. about 46, farmer, good constitution, regular habits; had been sick some five weeks with lobular pneumonia; after which a tedious convalescence set in, followed by sciatica and a low, constant fever. At this juncture (time of my visit) there was transient delirium, dry tongue, pulse 115, and intense pain along the course of sciatic nerve. The patient was much emaciated and prostrated. Indications to relieve pain and sustain strength. ℞. Tr. ferri murias, and cinchonia sulphas. Locally, powerful anodyne liniment. On second visit, two days after, found that the pain gradually shifted upwards, till apparently the whole spinal column was invaded. The head became retracted, and patient, when rational, referred all his misery to the nape. Delirium rapidly increased, succeeded by profound coma, under which the patient sank.

CASE VI. S. K., æt. 9. Healthy interesting boy, came home from school, seized with a chill, followed by fever. This partially subsided, when he was taken with the second on same day. From that time fever, delirium, and distressing retraction of the head continued for a number of days. The treatment had been, after evacuants: cold water to the head, blister along caput coli, sulph. quinia internally. Ten days from its onset (the time of my visit) there was but little fever or excitement; patient lay quiet; eyes wide open; pupils normal and equal; and entirely deaf. A few days after he became more restless, and died apparently from cerebral softening.

I pass over several like cases to one I saw in consultation with Dr. Milick.

CASE VII. R. O., æt. 11, a girl of fair health and moderate constitutional stamina. Had been seized, three days prior, with a chill, followed by fever, great restlessness, rapid pulse, and pain chiefly along the vertebral column and extending to the medulla oblongata. On the fourth day she was perfectly rational, yet restless; tongue moist; pulse 116, small and rather corded. Skin slightly dry, though easily excited to perspire. Face flushed, now and then, at which time irregular-shaped spots of blood hue, not raised, would appear upon the forehead and chin. She was paralyzed in upper and lower extremities. The respiration was somewhat laboured. Thirst very craving; complete anorexia, and insomnia. Had been blistered along the spinal column, purged, and taken calomel and ipecac with regularity. Infusion eupatorium perfoliatum, with permanganate potassa, and as soon as skin and pulse softens, quinia, with tr. ferri murias. On next day, although general symptoms looked more favourable, and she could even slightly command the use of the fingers, yet deglutition gave evidence of impairment, and the respiration was much more difficult. These leading functions became more and more difficult; the head, from the first slightly retracted, became more so, till thirty hours closed the scene.

Remarks.—In the diagnosis, etiology, and treatment of these cases, more especially of the first two, peculiar difficulties and embarrassments arose. The extent and degree of the local manifestations did not seem at all alarming, and yet there were unusual symptoms, and a gravity about general appearances that was perplexing. The physician in attendance on the twin case was even less prepared than myself for the untoward result. Two hearty, hale farmers, about the same age, neighbours, are taken sick on same day, in same way—each one of whom had a swelling on an arm, and leg, precisely alike—both dying within a week, and within forty hours of each other. Erysipelas, rheumatism, abscess, bone erysipelas, and poison—all had their advocates, public and professional.

Taken in some aspects, for example, that of intumescence, severe pain, intolerance of motion, and profuse perspirations it would seem to indicate rheumatism. But on sifting the cases it will be seen that there were symptoms, absent and present, that do not belong to this affection, and the sequel gives results more serious than the history of the disease will warrant. The inflammation was not confined to, nor did it manifest affinities for the fibrous or aponeurotic tissues, but seemed to engulf all the textures in which it was located. Also the constitutional disturbance seemed wholly disproportionate to the extent of local disease, and its rapidity and fatality were unprecedented. The extent and degree of the tumefaction, with the erythematic blush on the surface, might lead to the diagnosis of erysipelas; which, by the way, the majority of physicians who saw the cases, seemed to concur in. The intense lancinating pains, the great intolerance of motion, the profuse perspirations from the inception of the disease, the slight grade of inflammation upon the integuments, as well as the absence of vesication, all tended to disprove that idea.

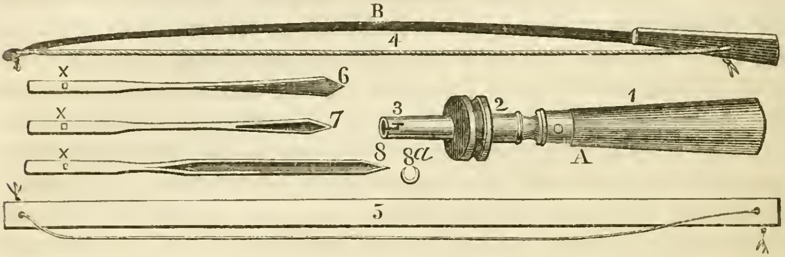
It may be thought that there is but slight evidence to class the two first cases as instances of cerebro-spinal meningitis. Taken alone, this may be true; but even in this view the mode of death was strikingly suggestive. The delirium, coma, and head retraction were the most prominent symptoms during the last hours of life. The nervous centres appeared to be overwhelmed by the phlogistic poison, arresting innervation, and causing death with unexpected rapidity. In Case I., I shall never forget the dread change wrought by half a dozen of hours. From conscious semi-delirium, a good, regular pulse, easy respiration, and moist skin, the patient rapidly fell into deep coma, stertorous breathing, feeble pulse, cold clammy perspiration, most marked retraction of the head, and a dirty, purple-faced visage. That there was metastasis of the disease to the brain did not seem to admit of a doubt, which, if there was, Cases IV. and V. would serve to dissipate. In Case IV., although nervous disturbance was well marked, yet it cannot with propriety be regarded as an instance of cerebro-spinal meningitis. It is inserted as an example of disease in an unusual form, and a phlogosis having special affinity for the nervous centres. Indeed, to my mind it is the external manifestations suffering translation, and producing the well known symptoms of that disease which gives these cases any special value. That this tegumentary inflammation, and that which has of late throughout the country given rise to the collocation of signs and symptoms, known under the name of cerebro-spinal meningitis, are one and the same, it seems to me, is fully borne out by the above instances. Allowing this to be correct, the cases are of value as indications to the treatment. No one could examine them attentively without being struck with the resemblance to rheumatism, as well as to erysipelas. A *materies morbi*, virulent and potent, has here located, and lighted an angry flame of vital resistance. Is this to be antagonized, or eliminated by what is termed antiphlogistic remedies? Practice has demonstrated their utter futility. Antiseptics, eliminators, and tonics are the obvious means of counteracting the destructive effects of intra-organic poisons. Subsidiary means are, of course, not to be neglected: such as moderating excessive action in individual parts, and attention to function partially or wholly arrested. An important fact, having an obvious influence upon treatment, is the rapidity with which *post-mortem* putrefaction ensued in all of the fatal cases. This destructive septicity, often shadowed forth in *ante-mortem* cases, did not escape the practised eye of Dr. C. C. Hildreth, in Case IV. He could not rationally attribute the extraordinary manifestations of that case to other causes than that of pyemia.

Art. VIII.—*Description of a New Bone-Drill.* By B. Howard, M.D., late U. S. Army. (With Eight Woodcuts.)

Being unable to find a bone-drill in the market, or one anywhere described, which would answer my purpose, I had one made by Messrs. Tiemann & Co. for field use, which combines these advantages: It is very simple; unlikely to get out of order by rusting or otherwise, and is easily cleaned. It has no projecting points to become entangled in the tissues, and works finely and rapidly at any angle with the surface of the bone drilled.

In the accompanying figures, A represents the stock, consisting of—1, handle, made of hard rubber or wood; 2, metal female socket, into which the axle of the wheel is inserted, and permanently fastened so as to allow only of a revolving motion. This is produced by applying the string of the bow, Fig. B, to the wheel, which revolves the shaft from 2 to 3. At Fig 3 is a socket into which the various drills are received.

Fig. B is an ordinary steel bow, attached to a wooden handle through a hole in which the catgut string, fastened to a loop at the end of the bow, is passed and secured by a knot at the back of the handle. The entire length of the bow is about 10 inches. Fig. 5 is a plain strip of steel with a hole in each end, through which the catgut is passed and secured by a knot. This bow is sufficient for all practical purposes, and is the only kind I have usually used in the field.



Figs. 6 and 7 are fine lozenge-shaped drills, having a catch at x, which forms part of the bayonet fastening, the corresponding part of which may be observed at 3, the socket of the stock into which the drills are fitted. By this arrangement for fastening, the drill may be easily introduced or removed from the socket, and yet be perfectly firm when in use. Also, what is still more important, on attempting to withdraw it from the bone after drilling, it cannot leave the stock and remain behind in the bone, as is so apt to be the case with the usual form of drill, to the exceeding annoyance of the operator. The length of the stock and drill together is about ($5\frac{1}{4}$) five and a quarter inches. So portable is this simple apparatus that military surgeons may put the stock into almost any common field case without any special compartment being provided for it. The drills may lie with the needles or be kept in the pocket-case, while the bow, at Fig. 5, can be laid on the saw, or in almost any other part of the case over the other instruments.

With this drill I have succeeded in operating with comparative ease, when with any other instrument I think the operation would have been impracticable without making a much larger incision to increase the room necessary for the operation. With regard to its efficiency in operating on the humerus, in some cases of fracture, I have usually drilled each hole in less than a minute.

Fig. 8, with its section *a*, is intended as an exploring drill for ascertaining the character of bony tumours. It is proposed to use it subcutaneously, and by microscopic examination of the contents with which it is charged at successive depths, to ascertain the interior character of the tumour. By increasing the velocity of the drill on withdrawal I have brought away successive strata in their due relation to each other very nicely defined in experiments on the subject, but as yet have had no opportunity to test its practical value. The drill is elegantly made in hard rubber and electroplated steel by Tiemann & Co., of New York.

NEW YORK, January 4th, 1865.

ART. IX.—*Phosphorus Necrosis. Extirpation of the Whole of the Right Half and Part of the Left Half of the Lower Jaw, without External Incision.* By WM. HUNT, M. D., one of the Surgeons of the Pennsylvania Hospital.

FREDERICK COURTNEY, aged 22, single, a native of England, admitted to the Pennsylvania Hospital January 11, 1865. Has been in this country three and a half years, and has followed his business, that of a lucifer match maker, at Wilmington, Delaware. He has been in the business for sixteen years, and has been a "dipper" during half that time. His family is healthy, and his own condition was perfectly so until the beginning of his present trouble. His teeth were sound, with the exception of one slightly carious molar of the right side of the lower jaw. From this he habitually picked away small pieces of food after eating. Soon there was pain about its root, and it was extracted. From this time (seven months since) the peculiar phosphorus necrosis may be said to have fairly begun, and it progressed rapidly, for the subject of it was compelled to give up the charge of his department about a fortnight after the tooth was drawn.

At the time of admission he was pale, thin, and weak; pulse 90 to 100. The face was very much deformed by indurated swelling, which was particularly conspicuous on the right side and about the chin. Three fistulous openings, surrounded by flabby granulations, were upon the right side of the neck. From these fetid pus exuded freely. A horribly offensive odour came from the mouth, and saliva and pus were constantly dribbling out. The gums were spongy on the margin, but partook of the general induration at the sides. Four sound but loose teeth occupied the right alveolar cavities. The upper jaw seemed healthy. The patient could not part the two jaws sufficiently to introduce a finger with facility. A probe detected necrosed bone both on examination in the mouth and through the sinuses. The examinations gave excessive pain. A portion of the left lower jaw only seemed clear of the disease. The symphysis was completely involved. The *morale* of the patient was excellent, in fact extraordinary. He seemed to be well acquainted with the disease, had seen it in England, and in most cases the bone had come away in pieces, or the patients had been worn out, and some may have died from exhaustion. He was ready to submit to anything for relief, but requested me, if possible, to operate from the inside of the mouth, after he had heard us speak of the external incisions, and felt us mark imaginary ones with the finger.

He was placed under milk-punch, beef-tea, chloride of iron, and quinine; anodynes at night. Permanganate of potash, gr. ij to f℥viij water, was used as a mouth-wash.

At first I had no other idea than performing the regular operation of excision of the jaw by an external and very extensive dissection; the celebrated operation of Dr. J. R. Wood, of New York, in 1856, and other operations for this disease, by external incision, being my guide. The patient's own request to operate from within, led me to think why this disease should be treated differently from ordinary necrosis, and whether cutting down directly on the part, and moving the dead bone piecemeal or altogether, would not be better than to submit the patient, in his weakened condition, to hemorrhage, to wounds of nerves, and, above all, to the disturbance and probable destruction of the very parts that would be or were engaged in restoration.

On Saturday, January 28, 1865, I operated. Dr. Garretson, who had seen the case, and took great interest in it, kindly lent me a cheek-holder which is used by dentists. By this the necessity for the fingers of an assistant being in the mouth is done away with, and thus much room is gained.

The patient was thoroughly etherized. The teeth that were in the way were extracted. By means of the cheek-holder, held by an assistant, the mouth was widely opened, and with a stout scalpel I made an incision directly along the top margin of the gum, from the root of the coronoid process to the symphysis; the soft parts, including the periosteum, were easily separated from the horizontal ramus, and the jaw was divided at the symphysis with a pair of strong cutting pliers. A blunt-edged cranial elevator was now used, and inserted behind the angle of the jaw. By careful and patient working, I found I could separate the attachments of the pterygoid muscles and the internal ligaments; and I also broke and detached the coronoid process, leaving but small and crumbling portions of it attached to the temporal muscle. I then inserted the elevator behind and above the angle, and tilted the condyle forward. The ascending ramus was now grasped with a pair of strong bone-forceps from the angle to the neck, and by means of twisting movements the rest of the attachments gave way, and the *whole* of the right lateral half of the bone, with the exception of a small portion of the crumbling coronoid, was removed.

The left half now claimed attention. About an inch and a half of this beyond the symphysis seemed to be diseased. The periosteum was readily recognized on this portion. The tongue was secured by passing a double ligature through its body, and by means of a loop it was held by an assistant. This proved to be a wise precaution, for although it is considered unnecessary by some authorities, we found that in this case, as soon as the genio-hyoid muscles were divided, all control of the tongue was lost, and it would certainly have fallen back on the glottis, had it not been for the loop. In Dr. Wood's case the patient swallowed her tongue, and was very near being suffocated. This precaution, it appears to me, is much more necessary when anæsthetics are used; for after the patient has his senses, and his head moderately elevated, there seems to be no danger from the slippery organ. This was proved in our case; for when the loop was removed on the day after the operation, the patient had a moderate degree of control of, and no tendency to swallow the member.

To return, the tongue muscles having been divided, and the gum and periosteum separated as far back as to what appeared to be a healthy portion, a chain saw was inserted, and the piece was readily cut out on a line corresponding with the anterior border of the first molar tooth. The hemorrhage was slight; but a few ounces of blood were lost, and no vessels required ligature. The time required was about three-quarters of an hour, much of which was employed in keeping the patient thoroughly under the ether, as the sponge had to be reapplied several times, the seat of the operation precluding its continuous use.

Feb. 1. The case is progressing very favourably, and the patient says he is decidedly more comfortable than before the operation. A lotion of muriate of ammonia and laudanum was applied to the swollen parts externally; the permanganate of potash is being injected daily, and often as a mouth-wash; the puriform discharge now is very slight. The patient swallows punch, beef-soup, arrowroot, and soft egg without difficulty. He sleeps much better than before the operation. As before stated, the loop was taken from the tongue on the day after the jaw was removed. To-day I found the patient up and walking to the bath-room for water. He was quite strong, and was able to converse with a considerable degree of facility. He has no doubt of a rapid recovery; but, from the history of other cases, I should not be surprised if the remaining portion of bone on the left side would become involved in the disease, and require removal.

Courtney gave me some interesting facts in answer to questions to-day. He says that his room is separated from the others; that he was exposed to the fumes of phosphorus arising from the paste, which is spread on a warm metal plate; that he was occupied but about half the day, at intervals, and spent the rest of it in fresh air; that the only mistake he made was in returning to his occupation immediately after the tooth was extracted. He is acquainted with the amorphous or allotropic phosphorus, and confirms the statement that it does not produce disease when used in match-making; but it does not make as salable an article as common phosphorus, on account of requiring a special arrangement to ignite it.

He was very particular not to let me into the secrets of the trade, and would not acquaint me with the composition or proportions of the materials used. He said there was one thing he wished me to know, and that was, that no man in the trade that wore a full beard and moustache was ever known to have the disease. He himself is naturally deficient in these useful appendages to a match-maker.

I asked him about children. He says they are employed in various departments, from five years old and upwards, but the disease does not attack them while undergoing second dentition. In confirmation of this statement, I notice all the cases I can find recorded by Dr. Wood and others range from sixteen years old and upwards.

I have nothing new to offer in regard to the pathology of this curious disease. It is very remarkable that a certain form of a substance that enters so largely into the composition of bone should be so destructive of it, while other forms, chemically the same, should be harmless.

Dr. R. E Rogers kindly examined some of the new deposit, and found it to be "simply bony matter, being chiefly phosphate of lime and animal tissue."

Dr. Edw. Rhoads and myself examined the old bone and new deposit microscopically. That the latter is a modification of bone-substance is plainly to be seen.

I would particularly call attention to the mode of operation in this case. I know there are cases of disease of the jaw that may require very extensive external dissections, but it is questionable whether necrosis should be treated by that means. Would it not be better to take the dead bone away in pieces, if it were found impracticable to gain such a fortunate result as in my case?

There is very little allusion to this mode of operating by surgical writers, and any tyro led by the authorities would, I am confident, prepare himself to perform the operation *secundem artem* by external incision. This certainly would have been my case, had not the patient himself asked me to operate "inwardly," and thus caused me to take the subject into consideration.

March 1. The patient has made very rapid progress towards recovery, and has not had a single drawback. The remark that Dr. Wood makes in the report of his case may be repeated here, that "the benefit which this patient derived from surgical interference was never surpassed in my experience." From being one of the most disgusting of objects both to himself and to others, he is now quite presentable. There is no unpleasant odour about him. The sinuses have healed. The end of bone on the left side is covered with healthy granulations. The articulation is good, very much better than before the operation. The patient can eat bread with soup, and has no difficulty as to diet; in fact, there is no one circumstance, either as to general health or as to local improvement, in which he is not the gainer. This remark may be qualified as to one point, and that is, that there is loss of sensation on the front of the chin and lower lip, from a quarter to half an inch on each side of the mesial line. The parts supplied by the anterior mental nerves may be readily traced by marking out the line of sensation. The patient says that he is improving in this respect, so that there is reason to believe that other branches of the fifth pair may take the place of those destroyed.

The benefit of the mode of operating has become particularly manifest. The line of new deposit being totally undisturbed, is getting firmer every day, and by its connection with the piece of the left jaw, has retained that in position, so that, should it not become necrosed, it will be very useful. The wisdom tooth of this piece is not yet cut, and as all the teeth of the upper jaw are good, the patient looks forward to enjoying a moderate degree of masticating power.

ART. X.—*Exsection of Right Clavicle.* By I. R. TRYON, M. D., Ass. Surg. U. S. N. (Communicated by W. Whelan, M. D., Chief Bureau Med. and Surg. U. S. Navy.)

PETER PITTS (mulatto), landsman, æt. 19, native Conn., from U. S. S. Hartford, admitted with gunshot injury received in action at Mobile Bay, Aug. 5, 1864. Patient supposed to have been wounded by a fragment of shell, which entered midway between articulations of the clavicle of right side, splintered the bone to both sternal and acromial extremities, fractured the first two ribs near sterno-costal articulation, passed through apex of right lung, and made its exit through scapula just beneath the spine of that bone.

Wound of entrance oval, edges jagged and inverted, with fractured extremities of clavicle pressing downwards and inwards upon the bloodvessels and nerves in that region.

Wound of exit nearly circular, edges lacerated and everted, with spiculæ of bone from clavicle and scapula protruding.

Six hours after the injury patient (being quieted from time to time by the inhalation of chloroform) was brought under the attention of the surgeons of the Hartford.

After careful examination, finding no portion of the clavicle could be preserved, Dr. James C. Palmer, Surgeon of the Fleet, removed the entire bone. During the dissection the attachments of the sterno-cleido-mastoid and trapezius to the clavicle were removed; the external jugular was the only vessel tied. The edges of the wound were brought carefully together by the interrupted suture, and water dressings applied; the spiculæ of bone removed from wound of exit, and dressed in the same manner.

Patient bore transportation exceedingly well, and on the afternoon of August 6, when admitted into the Naval Hospital at Pensacola, symptoms were quite favourable.

8th. Many additional pieces of bone were removed from wound of exit, and sutures taken from incision made by the operation. On account of the severe injury to the lung, pneumonia soon supervened, and very little hope of recovery was entertained by reason of the severity of the attack.

However, on the 19th, patient was fully convalescent from the pneumonia, wounds looked favourable, suppurated freely, and healthy granulations observed throughout wound of exsection, with sternal point nearly closed.

The patient continued to improve till the 22d instant, when he became restless and anxious; bed-sores were soon developed; and by gravitation of pus at wound of exit abscesses formed beneath the scapula, which exposed the entire lower border. *This wound* gradually assumed unhealthy action; patient became emaciated, and died of exhaustion at 7.20 P. M., August 20, 1864, twenty-five days after the injury and operation.

At the time of his death the wound of excision had entirely healed near sternal end, and was filling up rapidly by healthy granulations near its outer extremity. With this evidence of repair we can safely state the perfect success of the operation, and but for the severe wound of scapula the probable recovery of the patient.

Treatment throughout, tonics, stimulants, and anodynes. And during the different stages of pneumonia the usual course pursued.

Autopsy sixteen hours after death revealed the following interesting data: that the *missile* had passed through clavicle (causing the fracture as stated which prompted its removal); fractured the two upper ribs; wounded apex of right lung; and made its exit, directly through the scapula, just beneath the spine near inner border. There was comminution of the entire posterior superior angle, and a fissure through the bone two inches in length, direction, towards the inferior angle.

Direct communication *had* existed between *anterior* and *posterior* wounds.

On examination of the thorax about one-fifth of the upper portion of right lung was found to have been destroyed, probably by the missile, in conjunction with the subsequent suppuration. This cavity was lined with a tough membrane, three lines in thickness, dividing it from the lower portion of the lung, which was found to be perfectly healthy.

ART. XI.—*On the Uses of Sugar and Lactic Acid in the Animal Economy.* By SAMUEL JACKSON, M.D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania.

THE chemical history of the sugars has been very thoroughly worked out by the researches of the chemists. As much cannot be said for its physiological actions and uses in the animal organism, or its relations with vital phenomena. On these subjects much valuable information has been obtained from the investigations of Liebig, Lehmann, and Cl. Bernard. They have not, however, so completely exhausted the facts as to render further observations unnecessary, or to cause additional suggestions to be thought obtrusive. With this view, it has appeared to me that a short review of this subject would not be inappropriate.

A brief summary of the principal chemical facts will be required in order to obtain clear ideas of the actions and uses of these bodies in animal organisms. There are several varieties of sugar marked by special characters. Chemists divide them into two kinds or species. The first division or species comprises cane sugar, beet sugar, palm sugar (produced and consumed in India), and maple sugar, with some others of less importance. They are named cane sugars, from their possessing similar chemical properties; and because the Chinese or sugar-cane was the plant from which sugar was first made in China, anterior to our historical era, and at the present day nearly 90 per cent. of the sugars of commerce is furnished by various sugar-canes.

The second kind or species of sugar consists of glucose or fruit sugar, which exists largely in sweet grapes, and in raisins or dried grapes, from which it has received the name of grape sugar. It is not peculiar to the grape, but is present in nearly all sweet-tasting fruit. The sugar of honey is identical with glucose, which is also the kind of sugar found in the liver, blood, and alimentary canal of animals, and in the muscles, lungs, amniotic and allantoid fluids of the fœtus in its early stages.

The chemical reactions of the two kinds or species of sugar are in strong contrast. The cane sugars are not decomposed by pure potassa and soda; while they are transformed into sugar of the second species or glucose by dilute acids and heat. On the contrary, the alkalies potassa and soda decompose glucose, forming peculiar brown-colored acids; according to M. Peligot, the melassic acid. Trommer ascertained that a solution of glucose to which sulphate of copper and potassa were added and heat applied, decomposed the deutoxide of copper of the sulphate by robbing it of one equivalent of oxygen, the protoxide thus formed, being insoluble is precipitated. This is Trommer's test for diabetic sugar in the urine. Modifications of this test have been made; that of Bareswil is convenient and reliable. It has been adopted by M. Cl. Bernard, who has named it the cupro-potassic test for sugar. M. Becquerel ascertained by experiment that the cane sugars have no action on the deutoxide of copper, which is not reduced by them.

All the sugars proceed from the transformation of starch. The amylaceous and the saccharine groups of natural bodies are closely allied. They are nearly identical in chemical constitution, consisting of fixed equivalents of carbon (12), with slightly varying equivalents of oxygen and hydrogen in the proportions forming water—that is, from 10 starch, 11 cane sugar, 14 glucose or fruit sugar; or, in other words, they are compounds of a definite proportion of carbon with definite proportions of water. (*Payen.*) Hence their appropriate chemical name carbo-hydrates. From this sameness of composition, they are readily transformed into one another. Almost any organic matter in a state of change is capable of effecting this transformation of starch.

In the seeds of the cerealia and of maize an immense store of starch is annually laid up as aliment for man and animals. Close in contact with the germ in the seed, imbedded in starch, is placed a small albuminoid substance called diastase. As long as the seeds are kept perfectly dry, even for lengthened periods of time, no action takes place; but as soon as they are exposed to moisture and heat, the diastase exerts a catalytic or fermentative action, and converts the starch into dextrine and glucose. Being very soluble, they immediately become the organizable substance from which is formed vegetable structure. They are promptly absorbed by the germ, and under its organizing force they are transformed into cellulose, the primary organizable material from which are constructed the primary cells and vessels, and the vegetable tissues and organs.

Mialhe has shown that a similar albuminoid (nitrogenized matter) exists in the mixed saliva. Its catalytic power is so great that one part will transform two thousand of starch into glucose. Some physiologists and chemists (Bernard, Robin and Verdeil) do not admit the existence of diastase as a special organic body. They regard it as an albuminoid or nitrogenized substance, in which a change or molecular action is set up by moisture and heat. Its action, they assert, is the same as that of other animal matter in a state of change or starch. The difference, however, is in time. The action of the mixed saliva is most prompt on prepared starch. When a teaspoonful of hydrated starch is held in a sound mouth with no defective teeth, and well washed, to remove any remains of food from between the teeth, in a few seconds it becomes very fluid (dextrin), in a few more it is sweet, and, if tested at once, sugar is found in abundance. This difference in time, in the activity of the agent, is in striking contrast with that of common organic matter in a state of change when acting on starch.

MM. Robin and Verdeil, from similar facts, deny that pepsin is a special agent in the gastric juice; they regard it as organic matter in process of change, which, with an acidulated fluid, will, they assert, digest articles of animal food. A fluid of that composition will dissolve raw or cooked meat, but requires fifteen or twenty hours to effect it. Nor has it been shown that the special peptone or albuminose, the constant product and object of gastric digestion, resulted from the solution of this artificial digestive fluid. This imperfect observation cannot be accepted in the face of the daily experience of healthy digestion accomplished in from three to four hours.

The conversion of starch as an aliment begins in the mouth during mastication, and if in small quantities, is there completed; but when the food is largely amylaceous, the greater portion arrives in the stomach, where the process is continued, but not finished. The unchanged starch passing into the intestines, is brought under the action of pancreatin and the intestinal juice, and is rapidly transformed into glucose. When animals are fed exclusively on starch for some days, a portion is found in the feces unchanged; the larger part has disappeared in the intestinal canal. (*Lehmann.*)

It has been denied that starch is ever changed into glucose in the stomach, or that it can take place in the presence of an acid. (*Fremy and Boutron.*) This fact has been decided as respects the human stomach, by the experiments of Grünewald and Schroeder, who had under their charge a woman with a gastric fistula produced by a wound. They were communicated to M. Longet by M. Shiff, who witnessed the experiment. "Some ounces of hydrated starch were introduced into the stomach through the fistulous opening while fasting. Immediately after some starch was expelled, which was found already to contain sugar. In a quarter of an hour sugar was found abundantly in the stomach, and the whole of the starch was fluid (dextrin)."[1]

M. Bidder asserts that the power of changing starch into sugar in the stomach persists in the presence of free acids; and M. Ernst Schroeder states that the saliva possesses its activity in the stomach, and rapidly transformed swelled starch (turgefactum amylum) into sugar.[2]

This error arose from making the experiment on dogs, in which starch is very imperfectly changed, if at all, by their saliva. Starch does not enter into the natural food of that animal, and it appears as though no provision was made by nature for an office not intended in the natural state. If this view be correct, it is confirmative of the theory that there is a special agent, diastase, in the salivary fluid. Longet expressly objects to the using of these animals in this investigation; he alleges that their saliva has a very low transforming power, and their gastric juice is very acid.

The experiments of Lehmann, Bernard, Longet, Corvisart, and others, have established the facts of the transforming power of the pancreatic and intestinal juices, and that dextrin and glucose are the common products into which all the amylaceous and saccharine substances in food are converted in the alimentary canal. Glucose must, then, be regarded as the *proper physiological sugar.* Bernard has proved its existence in the earliest stages of fœtal development, before the formation of the liver, after which it is chiefly developed in that organ. He detected it in the fluids of the amnios and the allantoid.[3] In seeking for the origin of this sugar, or the glycogenic matter which produced it, he observed in the placentas of rabbits and guinea-pigs a whitish substance formed of a mass of cellules filled with sugar-forming substance. These last resembled in this respect the liver-cells of the adult animal. In pursuing this investigation, M. Bernard ascertained that similar epithelial or glandular cellules existed in the placentas of mammifers in the first periods of embryonic life, producing a sugar-forming substance. This anatomical element of the placenta, in some animals of this class, is mingled with the vascular portion of the organ, but in the ruminants it is separated in the form of epithelial layers on the amnios. In this manner, as Bernard had previously asserted, the fact is established that the production of an amylaceous sugar-making matter is a function common to animals and vegetables. The provision of transitory structure for producing dextrin and glucose in the earliest stage of the embryon, proves its importance in the nutritive actions and the organizing processes. They appear to be constituent principles of the organizable matter from which organized structures are formed.[1] In extending his researches, he discovered the same kind of cellules containing sugar-making substance to be diffused in certain tissues in this stage of embryonic development. M. Cl. Bernard gives a full and very clear exposition of the experiments by which he ascertained the above fact. As these are not material in this discussion, I refer those who would wish to see the details to the original memoir, and limit myself to little more than a mere sketch of the results he obtained. 1. The tissue of the skin is infiltrated with the glycogenic matter; which is contained also in the cells of the epithelium, as demonstrated by the microscope. Obtained by a decoction of the skin, it manifested its essential character of being changed into sugar by the action of strong acids and under the influence of animal or vegetable diastase. It possessed all the properties belonging to the glycogenic matter of the liver and placenta. It is found also in the corneous appendages of the skin, as hoofs, claws, &c.; it disappears as they become hard and organized. 2. The glycogenic cellules are readily demonstrated in embryons on the whole of the mucous membranes of the alimentary canal, from the mouth and tongue to the end of the large intestines; they are seated in the epithelium which covers the villosities. They also exist in the glandular ducts opening on the mucous membranes. 3. The same cellules are present in the mucous membrane of the bronchial tubes and of the nostrils. These cellules disappear, existing only during a limited period of embryonic existence; notwithstanding, the sugar-making matter remains diffused through the other portions of the pulmonary structure, and remains persistent until birth, as is shown by means of a decoction of the lung, in which it can be detected. 4. In the genito-urinary mucous membranes the same cellules are present during their evolution; they were found in the uterus, Fallopian tubes, bladder, ureters, and canaliculæ of the kidneys.

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[1] Longet, Traité de Physiologie, vol. ii. p. 174.

[2] Ib., *loc. cit.*

[3] Leçons de Physiologie, vol. i. Leçon xxi.

In the above instances the glycogenic cells and substance were observed existing in the first stages of development. They are only temporary; and as soon as the permanent epithelia are formed, they then disappear.

5. The muscles in the earliest state of development are preceded by embryonic cells in which no sugar-making substance can be detected by the microscope or by chemical reactions. But at a later period, when the histo-

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[1] Comptes Rendus de l'Acad. des Sci., vol. xlviii. pp. 77–86.

logical elements appear, the glycogenic matter is perceived interposed between the nuclei, and gives its characteristic colour on the application of the reagents employed. When the muscular fibre has acquired its development, the glycogenic matter then appears to be infiltrated in the substance of the fibre.

The smooth muscles contain the sugar-making substance, like the striated; it cannot, however, easily be detected by the microscope; but when a decoction is prepared from them, then it is found in great abundance, as it is when the striated are treated in the same manner.

The sugar-making substance is persistent in the muscles during the whole period of intra-uterine life, but disappears rapidly after birth.

It is a remarkable fact that the glycogenic matter in the fœtus does not exist in the nervous or osseous systems, or in the glands, appendages to the alimentary canal, as the salivary glands, pancreas (except in the epithelia of their ducts), and the glands of Lieberkühn, the spleen, and lymphatic ganglions.

The liver does not manifest any signs of the presence of saccharine matters until the middle of uterine life. At this time it has acquired its histological structure, and then commence its functions by the formation of bile and the existence in it of glycogenic matter. As the liver enters into functional activity, the glycogenic cellules and matters disappear from the placenta, its envelopes, and the tissues, that have been mentioned. Being a temporary organization and provisional function, at birth they have ceased to exist, and the liver enters on its permanent duties in the animal economy, lasting through life in its normal states.[1]

The preceding facts worked out by M. Cl. Bernard prove that in the first stage of the organic or nutritive actions, in animals as in vegetables, formative of plastic matter and organic forms, glucose is an indispensable agent. The organic, nutritive, and, as they may truly be named, vital actions, are identical in normal states through all the stages of existence, though, like all the functions, they are liable to be disturbed and perverted by various accidental influences. Yet the same law that presides over them in the embryonic state is persistent to the last span of life. It must be inferred from these facts that glucose is a physiological element in the vital or nutritive actions.

That nature, in milk, the food destined to nourish the young of the great class of mammalia, has made sugar a constituent, is a significant fact pointing to the same conclusion. Sugar of milk, in chemical properties, belongs to the first species, or cane sugars, and is convertible into glucose. (*Lehmann.*)

The liver holds a prominent position in the physiological history of sugar. The immediate connection of this organ with the presence of sugar in the animal organism is the great discovery of M. Cl. Bernard. He established as a primary fact that the introduction of saccharine matters into the liver by the portal circulation was incidental and intermittent, while the presence of glycogenic matter was persistent, and sugar was always to be found in the blood of the hepatic veins issuing from the liver. The proportion constantly supplied to the organism in this way was 1 to 1.50. When it exceeds 3 of dried blood, it appears in the urine. These facts have been verified by all the prominent physiologists of Europe. Subsequently, M. Cl. Bernard completed this investigation by proving—first, that the glycogenic substance belonged to the liver; that the sugar may be completely washed out of that organ, removed from the body, and be again reproduced after a few hours; and second, by procuring it in a purified state, entirely isolated from the liver and all animal structure. Obtained in this state, it presented all the physical and chemical characters of starch and dextrin.[1] M. Biot tested it in his polariscope, and found a decided rotatory action to the right. An experiment of M. Pelouze is quite conclusive. He treated one gramme of this purified glycogene with fuming nitric acid, and obtained by the process xyloidine or gun-cotton, similar to that procured from vegetable starch. It was very combustible, and detonated at 180° C. It was converted also into oxalic acid, and by analysis gave a chemical composition that corresponded with the formula $C_{12}H_{11}O_{11}$. This glycogenic substance of the liver is transformed in the manner of starch into glucose, by an animal diastase existing in the liver and blood. There are numerous interesting facts connected with the glucogenic function of the liver, but which are omitted as irrelevant to my present object, which is to prove the importance of glucose and lactic acid in the organism as essential agents in organic or nutritive actions.

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[1] Comptes Rendus de l'Acad. des Sci., vol. lviii. pp. 673–684.

This view might have been taken from an *a priori* deduction. The immense amount of sugar and starch that enter into the food of man and animals, all of which are converted into glucose in the alimentary canal, are a strong indication of its necessity in sustaining vital activity. Dr. Stolle, some years since, estimated the cane sugars produced and consumed as food at 5,145 millions of pounds per annum.[2] Since then the cultivation of sugar has been extended, and the sorghum has been introduced into this country and Europe, the syrup of which is largely consumed. To this must be added the great amount of starch that forms so large a portion of vegetable food, together with fruits rich in glucose, as grapes, raisins, dates, figs, bananas, and other tropical productions, and the actual sum of glucose used up yearly in animal organisms will be found little short of double the above estimate. The extent of the cultivation, production, and consumption of the numerous substances for this one object, discloses an instinctive want essential to perfect animal existence, and to supply which nature has made ample provision. Although the exterior resources are so abundant, yet nature, in her foresight, has guarded against the many accidents that, in the eventful lives of man and animals, subject them to the total or partial want of vegetable food, has endowed the liver with its glucogenic function, by which the organism is supplied with glucose. In animals that die of starvation, this office is continued until about the third day before death. Life is protracted, and opportunity given for the intervention of new changes or more favourable events.

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[1] Comptes Rendus, vol. xliv. p. 578.

[2] Johnson's Chemistry of Common Life, vol. i. p. 224.

Having shown the physiological position and importance of glucose in animal organisms, the next step is to follow it in its changes to its termination. A characteristic of glucose is its little stability, less than that of any other member of its group, which adapts it to its special offices in the economy. It disappears from the alimentary canal and the blood, as has been previously stated, while cane sugar, injected into a jugular vein, reappears unchanged in the urine.

In healthy conditions, glucose never accumulates in the blood or is found in any of the secretions, though it is introduced into the circulation without intermission from the liver or the alimentary canal, or both. It must, therefore, either be destroyed or transformed into some other constituent. In certain conditions, not properly ascertained, the reverse takes place, and the blood and whole organism are charged with glucose, and the urine is loaded with it, forming diabetes mellitus. What those conditions are has not been clearly determined. In fatal cases of yellow fever the liver possesses a light ochre colour, and, from a limited number of examinations, appears overloaded with an amyloid substance, with an entire absence of sugar. A somewhat similar state, but in less degree, it is said, occurs in fatal cases of bilious and intermittent fevers during the paroxysms. It would be an interesting inquiry to examine the liver in this point of view in all malignant forms of fevers.

The conversion of cane sugars and amyloid matters of food into glucose is effected in the alimentary canal. In some animals, as dogs, this change does not take place in the stomach, as proved by Bernard, but is promptly effected in the duodenum by the pancreatic fluid. In the human subject, hydrated starch is rapidly converted into dextrin and glucose, absorption of which takes place to a certain extent. That absorption of these products occurs, is rendered highly probable by the fact ascertained by Bernard, that cane sugar, introduced largely into the stomachs of animals, is detected unchanged in the portal blood. A portion also is changed into lactic acid. This is admitted by both Lehmann and Bernard, who state that lactic acid is often formed in the stomach from glucose by the disturbing action arising from the digestion of the albuminous matter of the food.

Glucose is spread somewhat rapidly throughout the intestinal canal, being found in the cæcum often in an hour after its entrance. It exists as a thin, sometimes clear solution. It disappears in varying times, by two processes—conversion into lactic acid and by absorption. Diversities of opinion prevail on these points, but I follow chiefly Bernard and Lehmann as my authorities. After an abundant meal of saccharine or farinaceous substances, the small intestines are decidedly acid; strongest in the duodenum, and feebler in the ileum. Lehmann asserts that this free acid "is lactic acid, according to direct experiments." Butyric acid is often found in the cæcum and colon. The absorption of glucose is rendered apparent from its rapid increase in the blood after a full meal of amylaceous or saccharine food (*Lehmann*).

The diffusive power of glucose is feeble, and its endosmotic equivalent low; hence its absorption is slow, and varies with the strength of its solution. This fact may explain why it is so seldom found in the portal blood, from the difficulty of detecting it in small quantities in that heterogeneous fluid. The whole of the glucose coming from the exterior, the representative of the amylaceous and saccharine food is disposed of in this way by conversion into lactic acid, and absorption into the circulating fluid.

The final destination of the interior supply of glucose, poured in a continuous stream from the heart into the general circulation in normal states of animal existence, can have but one solution. Glucose cannot continue to exist under the influence of oxygen, heat, and moisture, and in the midst of the unceasing conflicts of chemical atoms in the blood, and is transformed into lactic acid. Thus the final object of the vast provision of amylum and sugars in nature is to procure a constant supply of lactic acid, which thus appears indispensable for supporting vital activity in animal organisms.

This conclusion leads to a second inquiry, as to the uses of the lactic acid. Lehmann, in his *Manual of Chemical Physiology*, says "the physiological importance of lactic acid must not be too lightly esteemed."[1] It is so constantly present in the animal economy, that it may be looked on as one of its constituents. This subject has not been thoroughly handled. Liebig quotes the question, "What purposes does lactic acid serve in the organism?" and says it is of peculiar importance.[2] He does not solve it. His conclusion is that it is employed to support the respiratory process.[3] Lehmann and Bernard have gone more fully into the discussion. Their views are from different stand-points, and are, of course, dissimilar, but are not incompatible, and may be each adopted. Lehmann's view is purely chemical and physical, Bernard's is physiological. They are presented in the following brief summary.

1. The acid of the gastric juice has long been an unsettled physiological

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[1] Morris's translation, p. 78.

[2] On the Chemistry of Food, p. 101.

[3] Ib., p. 103.

problem. Lehmann states "it [lactic acid] is the actual cause, with hydrochloric acid, of the digestive power of the gastric juice."[1] It is certain that no other acids can take their place in an artificial gastric juice. Bernard, from numerous experiments, concludes that lactic is the natural acid of the gastric juice; and Liebig, from Lehmann's own experiments, by correcting an error, decides, "in that case the gastric juice contains lactic acid."[2]

2. In the intestinal canal, during digestion of mixed food, albumen and gelatin peptones, the products of the digestion of animal food, become acidulated by the free lactic acid with which they are mixed. According to Graham, acid bodies possess great diffusibility; and Jolly has proved that alkaline bodies have a low diffusive power, but are strongly osmotic. Hence the acidulous digested peptones separated from the alkaline blood in the capillaries of the mucous membranes are rapidly transferred into the circulation by the active endosmose excited in this manner.

3. The lactic acid, by the same physical properties and by the above process by which it promotes the introduction of nutritive materials into the organism, effects the elimination of effete and recremental matters out of the system. This action is most marked in the muscular system, which forms the chief mass of the higher animals. The muscles are strongly imbued with a special fluid (the muscular juice), contained in the interior of the fibrillæ. We are indebted to Liebig for a full knowledge of this fluid. It consists of the effete substances creatin, creatinin, and inosic acid, with alkaline salts held in solution by an acid fluid. Lactic and phosphoric acids, and acid lactates and phosphates, cause its acidity, of which lactic acid is the most important. The elements of active endosmose are here present: an alkaline albuminous fluid in the fine capillaries on one side, and an acidulous fluid on the other, separated by little more than basement membrane must cause a constant flow of the muscular juice into the blood, in which the above effete matters are found to exist, which are rejected by the kidneys, and again met with in the urine, except the inosic acid, decomposed in the circulation. Liebig denies the constant presence of lactic acid or lactates in the urine. He relates an experiment made with "three persons who took a quantity of lactate of potash sufficient to have yielded an ounce of lactate of zinc. Before the experiment the urine had an acid reaction; immediately after it was alkaline, and the potash was detected in it, exceeding in quantity that in ordinary urine. The lactic acid could not be detected in it; it had disappeared in its passage through the blood." Lehmann concludes from[3] this ready combustibility of its alkaline salts that lactic acid becomes an important assistant in maintaining the animal temperature. This is true,

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[1] Lehmann's Manual of Chemical Physiology, Morris's translation

[2] Chemistry of Food, p. 138.

[3] On the Chemistry of Food. J. Liebig, p. 102.

but not more so than any other of the thousands of never-ceasing oxidations going on during life throughout the whole organism, each one contributing its mite, its minimum degree of heat. By this method nature secures the remarkable equilibrium of animal heat indispensable to health and existence.

4. The views of M. Cl. Bernard are almost entirely physiological. He lays down a proposition, or it may be termed a law, which, it appears to me, must be admitted as the expression of an important truth. It is, that whenever vital phenomena are manifested in acts of organization, two circumstances are to be kept in view: the first is the being, form, or tissue in a state or process of development; and next is the organizable matter or medium in and from which the development is taking place. The first will be passed by, as not of moment at this time, and I proceed to the second, in which will be found the examples of the principles it is attempted to establish.

Organic cells or tissues, when in the act of nutrition or development, must call incessantly on the medium of organizable matter that surrounds or bathes them for the materials of their organic composition. Two conditions are required in the organizable matter to adapt it for that purpose: instability of its chemical combinations, and an extreme mobility of the organic molecules, the preordained arrangement of which gives origin to specific cells and tissues. These are the primary and essential phenomena of life, and enable the organic chemical elements to be grouped and disposed of uninterruptedly in thousands of modes under germ action. Animal and vegetable cells and tissues can be developed only from a plastic matter in which the organic chemical elements and the organic molecules are prevented from falling into a fixed or statical condition, in which consists the chemical and molecular stability, the characteristic of dead and inorganic matter. Dry gangrene and local embolism may be cited as examples.

This unceasing play of the chemical elements and of molecular activity, so essential to all the vital phenomena of germ development, assimilation, nutrition, secretion, &c., are effected by chemical and physical causes and agents coming from the exterior. Of these the most active and powerful is oxygen; next in power and energy is lactic acid, not glucose. The mere conversion, new arrangement of its chemical atoms, could give no impulse to molecular and chemical disturbance in other bodies, even in contact. But lactic acid, as soon as formed, seizes on the alkalies, converts them into lactates, "which are destroyed as fast as they are produced." (*Liebig.*) In this instance we are presented with the extraordinary phenomenon, persistent through life, of the production of a complex chemical body in the blood, and its almost immediate destruction, apparently without a sufficient object. The lactates have feeble resisting power. Oxygen, at the temperature of the body, and in its active state (ozone), tears asunder the chemical atoms of the acid, forming carbonic acid and water, its oxygen is set loose in a nascent state (highest intensity of chemical force), and the alkalies escape through the kidneys. The blood, by these combined agents, oxygen and lactic acid, is the seat of intense chemical and molecular commotion. This state of the organizable matter, it has been shown, is a *sine qua non* of all vital actions. The enigma above stated is solved. The final result of this discussion is that the intention of the immense provision of amylaceous and saccharine substances in the food of animals is the constant production of lactic acid in the blood of animals, to assist in the support of vital motion in the blood. The mode of action of some deadly poisons bears confirmative evidence in favour of the doctrine. Carbonic oxide, hydrocyanic acid, sulphuretted hydrogen, chloroform appear to exert their fatal effects by arresting the chemical action of oxygen in the blood. Carbonic oxide expels the oxygen of the circulating fluid, though it retains the arterial hue even in the veins. (*Bernard.*) The blood, in poisoning by hydrocyanic acid, is of a dark hue, neither venous nor arterial; it is the same for sulphuretted hydrogen. Exposed to the air or oxygen, the colour is not changed. The same facts attend the poisoning by aconitia and veratria. The blood has been reduced to a quiescent state—to a statical condition, and sudden death is the inevitable consequence. Their mode of action on external bodies shows the correctness of our explanation. They prevent fermentation, and arrest it when in progress. Now Pasteur has demonstrated that fermentation is a vital and not a chemical phenomenon, produced by the development and nutritive action of living organisms, vegetable and animal. In alcoholic fermentation sugar is decomposed by the torula cerevisia, which abstracts a part of its carbon and hydrogen for its own nutrition. The remaining constituents enter into new combinations forming vegetable carbonic acid and alcohol. The vitality of the organism is destroyed by the poison, and the fermentation ceases. Modern physicists have demonstrated that light, heat, magnetism, and electricity, the great forces of nature, are varieties of motion. This investigation has led to a similar conclusion, that all purely organic and vital phenomena arise from atomic disturbance and molecular motion.

In the preceding discussion I have adhered to the doctrine of M. Cl. Bernard that the heart injects without intermission into the blood, in normal conditions, a certain quantity of glucose. I am perfectly aware that the fact has been contested by Dr. F. W. Pavey. I have not been convinced by his facts or his argument. He starts with the assumption that all the examinations of the blood, before his own, had been made after death, and that no one had taken the blood from the right heart by catheterism except himself. In this statement he was certainly mistaken. M. Cl. Bernard, in his physiological winter course of 1855, on the 9th of January, in his fifth lecture, made a comparative experiment on two dogs, the one fasting, the other in the act of digestion after a full meal of animal food. The object of the experiment was to show "the physiological oscillations in the distribution and amount of sugar in the blood under the influence of digestion." This was done by taking portions of blood, from the right ventricle, the carotid, and the jugular of each animal. The blood was obtained from the right heart by catheterism—"*en pratiquant une sorte de cathêtérisme cardiaque*"—which was performed by a simple instrument, of which he gives a figure, and he designed a simple and neat method of operating which he describes. It is omitted for want of space. The results were that of the samples taken from the first dog (fasting) in that from the right ventricle alone was sugar detected in small amount; but those from the second dog all yielded sugar, that from the right ventricle quite abundantly, less in that from the carotid, and still less from the jugular.[1] These conclusive experiments appear to have been unknown to Dr. Pavey.

M. Chaveau, 1856, presented to the Académie des Sciences a series of experiments on the blood of large quadrupeds, as horses, asses, mules, &c. His connection with the Imperial Veterinary School of Lyons gives him great facilities for experimenting on animals. He collected specimens of blood from horses and dogs fasting from twelve hours to six days. The blood was obtained from the coxigeal, femoral, and carotid arteries and their collateral veins, and from the heart. A quantitative analysis was made with a uniform result; sugar was found in all the different portions of blood, that of the arteries giving the highest figures, and that of the veins the lowest. The blood from the two hearts was nearly the same. But the capital and decisive fact was the catheterism of the sub-hepatic veins through the jugular, after ligation of that vessel, and the auricle into the posterior vena cava; and the blood obtained was the richest in sugar. M. Chaveau remarks that his method was entirely physiological and not open to objection, for in operating on solipedes, the animal was always standing (debout[2]).

I wish to state, in conclusion, that my young friend Dr. W. F. Atlee, consulting surgeon at the U. S. Satterlee Hospital, two years since treated gangrenous wounds successfully with sugar. This discovery has been confirmed by Dr. J. H. Packard, one of the surgeons to U. S. Hospital, Beverly, N. J.[3] The active agent in this treatment is not the sugar, as supposed, but lactic acid, into which "sugar of milk, starch, grape sugar, and cane sugar are converted by *contact* with animal substances in a state of decomposition." (*Liebig.*) I would suggest to the gentlemen, surgeons of the U. S. hospitals, in which this formidable affection has frequently prevailed, that they should give a trial of the effects of a direct application of lactic acid. It can be done very readily by using very sour milk. The wound ought to be thoroughly washed with milk, and cleansed of putrid matter, and then covered with pledgets saturated with the acid fluid frequently renewed.

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[1] Leçons de Physiologie Expérimentale, vol. i., leçon v., pp. 119–122.

[2] Comptes Rendus de l'Académie des Sciences, vol. xiii. pp. 1008–12.

[3] See January No of this Journal.

This explanation is supported by the well known fact, that the gastric juice, in which lactic acid is always present, is antiseptic, and arrests putrefaction.

Art. XII.—*On the Therapeutic Action of Digitalis in Certain Conditions of the Brain.* By R. B. Mowry, M.D., of Alleghany City, Pa.

The interesting observations, which, of late years, have been made, of the antagonistic effects of medicine, tend greatly to increase our knowledge of therapeutics; careful observations of this principle may lead to useful discoveries.

Having witnessed the happiest results, in quite a number of cases of delirium tremens, produced by the administration of large doses of digitalis, it occurred to me that its therapeutic action might be extended to other diseases, in which cerebral symptoms were of a similar character.

The following case, made out from notes taken at the time, will be in point:—

On the 30th of October, 1864, I was called on to visit George B., a boy of fourteen years of age, who had hot skin, frequent pulse, dry brown tongue, and tenderness in the right iliac region. The following history of his case was given: He had been complaining for about a week, had had looseness of the bowels, want of appetite, chilliness and restless nights. I believed it to be a case of typhoid fever, which was prevailing in his immediate neighbourhood, to a very considerable extent. He was ordered turpentine emulsions and pulv. ipecac, eight drops of the one and one-fourth grain of the other, to be taken every three hours.

Oct. 31. Skin and tongue as before; pulse 104; bowels moved several times. Same prescription continued.

Nov. 1. Pulse 112; some disturbance of the brain; had not slept during the night; had passed urine, and had several operations of the bowels; in addition to the turpentine mixture prescribed three drops of tr. verat. viride, every three hours.

2*d*, 8 A. M. Found him in a state of raving delirium, talking incessantly, answering imaginary persons, fighting imaginary battles, escaping from imaginary dangers. So busily engaged was he, in his imaginary troubles, that it was with great difficulty his attention would be arrested long enough to get him to put out his tongue. His skin was hot, tongue dry, covered with a dark brown coat; sordes on the teeth; abdomen somewhat tympanitic, and evidently tender over the right iliac region; had had no movement of the bowels during the night; head not particularly hot; pupil somewhat contracted, but not fixed; no injection of the conjunctiva. On account of his restlessness, could not satisfactorily count his pulse, but certainly it was not any less frequent than before stated; he had not closed his eyes, which were very wide open. Prescribed opium and calomel, one grain each, every two hours; continued the turpentine mixture, and applied a blister, four by six, to the back of the neck.

8 P. M. Blister had risen well; had taken five doses of calomel and opium; delirium unabated, talking as incessantly as before described. Prescribed one-half drachm of tr. digitalis every hour till sleep would be induced; continued the turpentine mixture.

3d, 9 A. M. Tongue dry, dark brown coat; sordes on teeth; pulse 106; delirium not so incessant, can arrest his attention; had not passed urine during the night; induced him to make an effort to urinate when he passed about a pint of dark brown urine; had not slept.

8 P. M. Tongue moist; pulse 100; delirium considerably abated; bowels had been moved, with a dark stool somewhat consistent; had passed urine freely; had not slept; continued the prescription.

4th, 9 A. M. Found him in a calm sleep; had slept at intervals since midnight; pulse 90; had not taken the digitalis since midnight; he soon awoke, looked composed, asked some rational questions; tongue moist, less coated; bowels still tender in right iliac region. One gr. of sulph. quinia every three hours, and beef tea.

5th, 9 A. M. Has slept at intervals since last noted; has had several stools of a very dark colour, and somewhat consistent; tongue moist, and beginning to clean; pulse 90; has an occasional intermission; continued the quinia and beef tea.

10th. His desire for food had become somewhat urgent, and he was anxious to sit up. Convalescence was rapid; in a few days I ceased to visit him.

This boy of fourteen years of age, of temperate habits, who had taken but little medicine before this sickness, during thirty hours took nearly two ounces of tinct. digitalis, made from the best English herb, according to U. S. Pharmacopœia, and the only untoward symptoms produced by it was an occasional intermission of the pulse, which occurred the day after he ceased to take the medicine, and which soon passed off. I prescribed the digitalis in this case because I believe the delirium to have been produced by the toxæmia of typhoid fever. The symptoms of the brain disturbance were almost, if not altogether, identical with those of delirium tremens, produced by alcoholic poison. Large doses of digitalis had antagonized the poison in the one case; it was rational to conclude that it would be safe to administer it in another, having very similar symptoms; although produced by a cause having a very different source.

Why did this case convalesce so rapidly? To answer this question, I might ask why do cases of typhoid fever generally convalesce so slowly? Is it not owing to the lesion produced, and, this too, for the most part, in the glands of Peyer? Physiologists tell us that these glands eliminate excrementitious matter. Certainly, in typhoid fever, they are overtaxed in eliminating poison from the blood; hyperæmia, inflammation, and ulceration of these bodies are the result.

Ulceration of the glands of Peyer is, I conceive, a consequence, and not a cause of typhoid fever, as we have been taught by the older pathologists. If the poison of typhoid fever could be completely antagonized, all the effects, which retard recovery would be obviated, and a rapid convalescence would take place.

ART. XIII.—*Gunshot Wound of the Internal Carotid and Vertebral Arteries—Fracture of the Atlas—Secondary Hemorrhage and Death.*

Reported by DEWITT C. PETERS, M. D., Asst. Surgeon U. S. A., Surgeon in charge of Jarvis U. S. A. General Hospital, Baltimore, Md.

PRIVATE I. I., 187th N. Y. Vols., age 27, was admitted into this hospital on the 11th of Feb'y, 1865, labouring under a gunshot wound of the mouth and throat, received at Hatcher's Run, Va., Feb'y 6th, 1865. The patient at the time of admission into the hospital was able to walk about, and a casual observer would have thought him to be in nowise a dangerous condition. The musket-ball had entered directly the mouth, and, in its progress, carried away the upper and lower incisor and canine teeth, and passing backwards lodged, but where was not discovered until the post-mortem revealed the fact. The index finger inserted into the mouth found that it had wounded the right side of the tongue, and from thence the track ran to the right side of the neck and backwards through the right pillow of the fauces, and then could not be further traced. The patient himself thought that he had swallowed the ball. The only inconvenience he suffered was in either talking or swallowing, and when resting on his back, and being so apparently comfortable it was not thought best to trouble him, but orders were given to the nurses to watch him closely. An examination externally revealed no signs of injury, and the only symptom there marked was tenderness over the upper vertebra and general soreness of the muscles of the neck. He had not the least sign of paralysis, and the day previous to his death he was walking about his ward and even requested his medical attendant to extract for him a tooth which was almost detached by the ball and was giving him some annoyance.

On Feb'y 12th, 1865 (six days after the injury was received), at 5½ P. M., a most furious, arterial, secondary hemorrhage occurred through and out of his mouth. Before assistance could reach him (although close at hand) he had bled so copiously as to be in a state of syncope, and while bleeding he had two convulsions, one of which was quite violent. During the active hemorrhage pressure was made over the common carotids, yet it did not seem to control it to any great extent, and notwithstanding various expedients were employed it only stopped when syncope came on. It is proper to state, also, in this connection, that pressure from within by the fingers did not stay the hemorrhage, but to his detriment increased the suffering of the patient. The exhausted condition of the patient at this time rendered it inexpedient to resort to any operative interference. The hemorrhage having entirely ceased through this effort of nature, it was ordered that diffusible stimulants be freely given in such quantities as the stomach could bear, and that ice should be constantly kept applied to the parts, and under this treatment he slowly rallied and rested quietly until 5 o'clock on the following morning, when a gush of blood took place from the patient's mouth, and he expired.

An autopsy was made twenty-four hours after death, and the track of the wound was thoroughly explored, after both common carotids had been injected with a suitable material, which, on cooling, hardened and distended the principal arteries of the head and neck. On the plan of operating recommended by Mr. Guthrie on the living subject, an angular flap of the integuments was made corresponding with the ramus and body of the lower maxillary bone, and this integument was turned back, and by the saw the bone was divided near the first lower molar tooth, and the upper fragment raised. By a little dissection the wound was fully exposed and the first vessel wounded was ascertained to have been the right internal carotid, which was converted into a traumatic aneurism for near its entire length, and its position was occupied by an extensive clot of blood. On introducing the finger into the track of the wound at this point, and carrying it almost directly backwards and inwards, the ball was found loosely resting against the transverse process of the first cervical vertebra, and was easily extracted without the aid of the forceps. By further careful exploration of the parts adjacent to where the ball was arrested in its progress, it was ascertained that the right vertebral artery had been extensively lacerated at the point where it passes through the foramen of the transverse process of the atlas, and that the ball resting there had probably acted as a plug in preventing hemorrhage from that artery, and in proof of this assertion no clots of blood were discovered here. The right transverse process of the atlas was completely fractured and comminuted, and the fragments were readily removed *en masse*, simply with the fingers and without any force. This fracturing of this process of the atlas was, on further investigation, found to extend through the ring down to the spinal cord, yet the fragments were not driven in, upon, or were they apparently causing any pressure on the cord. On examining the brain, heart, and lungs they were found healthy and in a normal condition, but were exsanguinated.

Remarks.—It is somewhat remarkable that this soldier was not killed outright, or having lived so long he should not have suffered from paralysis in some form, and, in fine, that his terrible wound should have given him so little trouble up to the time of his first hemorrhage. In my humble opinion operative interference at any stage of the treatment would not have saved nor even prolonged his life.

REVIEWS.

ART. XIV.—*A Manual of Practical Hygiene. Prepared especially for Use in the Medical Service of the Army.* By EDMUND A. PARKES, M. D., F. R. S., Professor of Military Hygiene in the Army Medical School; Member of the Medical Council of General Education; Examiner in Medicine in the University of London; Emeritus Professor of Clinical Medicine in University College, London. London: 1864. 8vo. pp. 612.

Practical Observations on the Hygiene of the Army in India: Including Remarks on the Ventilation and Conservancy of Indian Prisons; with a Chapter on Prison Management. By STEWART CLARK, M. R. C. S. Eng., Inspector-General of Prisons, Northwest Provinces, India. Illustrated with Wood-cuts. London: 1864. 8vo. pp. 162.

Lectures on Public Health, delivered in the Royal College of Surgeons in Ireland. By E. D. MAPOTHER, M. D., Professor of Hygiene and Medical Officer of Health, and Surgeon in St. Vincent's Hospital, Dublin. London: 1864. Fcap. 8vo. pp. 280.

Report of the Proceedings of the National Association for the Promotion of Social Science, at the Seventh Annual Congress, held in Edinburgh, October, 1863. Edinburgh: 1863.

HYGIENE is assuming, now, its proper place among the sciences. More has been written upon it, probably, in the last ten years, than in all the preceding years of the century; and many more readers are attracted to the subject. Under the titles of "Preventive Medicine," "Public Health," and "Hygiene," professorships have been founded in many medical schools on the continent of Europe, and in a few of those of Great Britain. In the great Army Medical School at Netley Hospital there are now combined, under the direction of Dr. Parkes, the most perfect appliances for teaching hygiene hitherto realized.[1] This is as it should be. In this country, where the need is equally great, the subject has as yet received only partial or incidental attention in any course of medical instruction, although in private and public labours it is far from being neglected by our professional men.

The work of Dr. Parkes is one of the most important upon its topic ever published. Its origin is explained by its author as having been due to the requirements of the Army Medical School, established upon the recommendation of a royal commission appointed to inquire into the sanitary condition of the army in England. Its design is to furnish a text-book of hygiene, illustrated by examples drawn from army life, for the students of the Army Medical School.

It is divided into two Books, the first considering somewhat generally the chief subjects of hygiene, the second more particularly the service of the soldier. Holding in view constantly what would be useful to army surgeons, often far from all books, Dr. Parkes has endeavoured to make it a work of reference. In this he has succeeded well, by a research which must have been ardnous, and a skill and care in compilation and selection which entitle him to the thanks of those for whom he has laboured. A dozen books might be made of the material which he has here collected and condensed into a moderate volume. But, as a text-book for study or reading, this very abundance of hard facts and tables, with very little discussion and no speculation, diminishes its attractiveness. It is, with great value, too heavy to be popular, as the bar of gold is in comparison with the neat and portable coin.

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[1] Mapother, *op. cit.*, Introductory Discourse.

That Dr. Parkes appreciates the vast extent of his department, is shown by the following language in his Introduction:—

> "Taking the word hygiene in the largest sense, it signifies rules for perfect culture of mind and body. It is impossible to dissociate the two. The body is affected by every mental and moral action; the mind is profoundly influenced by bodily conditions. For a perfect system of hygiene we must combine the knowledge of the physician, the schoolmaster, and the priest, and must train the body, the intellect, and the moral soul in a perfect and balanced order. Then, if our knowledge were exact, and our means of application adequate, we should see the human being in his perfect beauty, as Providence perhaps intended him to be; in the harmonious proportions and complete balance of all parts, in which he came out of his Maker's hands, in whose divine image, we are told, he was in the beginning made. But is such a system possible?"

Sketching a plan for a work upon the whole scope of hygiene, personal and public, our author narrows himself down to the basis of army sanitation; which, nevertheless, includes and exemplifies the general principles of hygiene applicable to all men.

Water forms the subject of his first chapter. Medical officers must consider in their reports the following points:—

> "1. The quantity of water per head per diem; its sufficiency, or the reverse.
> "2. Its quality, including its physical and its microscopical characters, and its chemical composition.
> "3. Its collection, storage, and distribution.
> "4. The condition of tanks, cisterns, pipes, &c.
> "5. In the field the medical officer may be called on to indicate the possible sources of water, to estimate the quantity attainable from any source, and to determine the quality." (p. 2.)

Ample and accurate details are given upon all these particulars, with the methods of examining different waters, microscopically and chemically. It is remarked that at present, owing probably to the impossibility of making complete analyses of waters, the exact connection between impure water and disease does not stand on so precise an experimental basis as might be wished. As observed by Mr. Simon, in one of his philosophical reports upon the health of London, we cannot expect to find the effect of impure water always sudden and violent; its results are indeed often gradual, and may elude ordinary observation, yet be not the less real and appreciable by a close inquiry.

Besides diarrhœa, dysentery and cholera, malarious and typhoid fevers are, by many authorities, as cited by Dr. Parkes, considered to depend sometimes upon contaminated water for their production and extension. In regard to autumnal fevers, it has been a general belief—so says our author—among the inhabitants of marshy countries, that the water could produce them. A number of instances are admitted by Dr. Parkes to sustain this view.

"The case of the Argo, recorded by Boudin, is an extremely strong one. In 1834, 800 soldiers, in good health, embarked in three vessels to pass from Bona in Algiers to Marseilles. They all arrived at Marseilles the same day. In two vessels there were 680 men, without a single sick man. In the third vessel, the Argo, there had been 120 men; 13 died during the short passage (time not given), and of the 107 survivors no less than 98 were disembarked with all forms of paludal fevers, and as Boudin himself saw the men, there was no doubt of the diagnosis. The crew of the Argo had not a single sick man. All the soldiers had been exposed to the same influences of atmosphere before embarkation. The crew and the soldiers of the Argo were exposed to the same atmospheric condition during the voyage; the influence of air seems therefore excluded. There is no notice of the food, but the production of malarious fever from food has never been suggested. The water was, however, different—in the two healthy ships the water was good. The soldiers on board the Argo had been supplied with water from a marsh, which had a disagreeable taste and odour; the crew of the Argo had pure water." (p. 54.)

The belief that typhoid fever can spread by means of water as well as air appears to be quite of modern origin, though some epidemics, such as the "Schleimfieber" of Göttingen, in 1760, were attributed in part to the use of impure water. Walz in 1822, Müller in 1843, Richter in 1848, and Austin Flint in 1852, are quoted as having recorded outbreaks of this fever which appeared to have originated in contamination of drinking-water by fecal matter, sewage, &c. Dr. Flint's case was that of the occurrence of typhoid fever in a perfectly healthy village, after the arrival and death of a stranger at an inn—all those attacked using the water of the inn well. The rapidity with which the disease spread did not seem like the ordinary rather slow propagation of typhoid fever through the air. Dr. Parkes observes that "although the evidence is not perfect, it is extremely probable that the well water of the inn was the main medium of the dissemination." Carpenter of Croydon, Routh, W. Budd, Simon, Schmit, and Wilkinson are further mentioned as having narrated particular cases of similar propagation of typhoid fever. Jenner, Budd, and Simon are referred to as especially competent authorities in favour of the *opinion* that water may be the medium of extending typhoid fever.

We have been somewhat full in the citation of Dr. Parkes's statements upon this topic, as it is one of great practical importance. He adds two questions: first, as typhoid fever undoubtedly spreads also through the air, what is the proportion of cases disseminated by water, as compared with those disseminated by air? This cannot be yet answered with positiveness; Dr. W. Budd thinks that the cases of water propagation are numerically small. Secondly, will decomposing sewage in water produce typhoid fever, or must the evacuations of a typhoid patient pass in? The view that the stools of typhoid are the especial carriers of the poison was first explicitly stated by Canstatt, and has been ably argued by W. Budd. In the section "On the Prevention of Diseases in the Army," in a later part of his book, Dr. Parkes thus speaks (p. 437) of the causation of typhoid fever: "A poison of animal origin; one mode of propagation is by the intestinal discharges of persons sick of the disease; other modes of origin and transmission are not disproved. The mode of entrance is by air and water." A peculiar condition of the body is nevertheless considered to be as essential as in smallpox, a first attack preserving in great measure from a second.

These views are gaining ground in England, although they are still not universal. Dr. Jenner holds typhoid fever to be contagious, although infinitely less so than typhus. Dr. Watson doubts the origin of continued fever in any case without contagion. Dr. Murchison has identified his name with the theory that while typhus is caused by overcrowding, with deficient ventilation and destitution, typhoid fever is produced by emanations from decaying organic matter, or by organic impurities in water, or by both combined.

In Edinburgh, where typhus is the rule and typhoid the exception, dissent has been expressed. In regard to the latter, Dr. Bennett says:[1] "The contagious nature of this form of fever is still doubtful." He asserts that the history of the remarkable epidemic of 1846–7 did not, under his observation, support Dr. Jenner's theory. Dr. Christison, in his able address on public health before the congress of the Social Science Association (Report, p. 109), uses this language in regard to enteric fever:—

> "Of all forms of fever, none has been more confidently ascribed than this, by London writers, medical and non-medical, to faulty drainage and faulty provision of water-closets. If we are to believe what some have advanced on the subject, there is no case which may not be traced to foul air, derived mainly from one of these sources. Were this a well-established principle in social science, the extinction of so deadly a fever should be no very difficult matter. But I am sorry I cannot call on you to assent to this theory, and carry out its consequences, for there are insurmountable facts in its way. During the period that this scourge has been increasing in London, has London become less drained, or the habits of its working classes less cleanly? Does the disease generally appear where drainage is bad, or water-closets wanting or faultily constructed? Does it attack workmen who live in the London drains, as well as those over them, near them, or far from them? I believe all these queries must be answered in the negative. And what is the case here? This fever does not by any means generally break out where the streets are ill drained, water-closets wanting, and habits filthy. In countless places of that sort in Edinburgh it is unknown; while I have known a number of deaths from it among people of easy circumstances, not at all so exposed. I suspect, then, that it must be allowed of this disease, as in respect to most other epidemic diseases, that we do not yet know its cause; that foul air merely favors its invasion, but that its true cause is something much more specific, which has hitherto eluded our search."

Fearing to occupy too much space with this topic, we may merely recall, in another quarter, the absolute denial by Andral of the contagiousness of typhoid fever; and the language of Chomel, in 1834, that, besides himself, not one medical man in a hundred in Paris believed in its propagation by contagion. On the other hand, Bretonneau, Leuret, and Gendron[2] have argued strenuously to prove this mode of its extension. In this country, besides Dr. Flint, Nathan Smith in 1824, and Samuel Jackson, of Northumberland, in 1845,[3] adduced instances in support of the same conclusion. This is, however, certainly not the general opinion of practitioners in this country. We find nowhere a view of the subject so sound, in accordance with the preponderance of the facts observed on this side of the Atlantic, as that of Dr. Wood:—[4]

> "It not unfrequently originates in the pure air of the country. I have met with it in the healthiest regions of our Middle States, even among the mountains. It is constantly springing up in isolated cases, without any possible communication. If contagious at all, it must be so only feebly, and under peculiar circumstances. On the whole, the most rational view of the etiology of enteric fever seems to be, that an inherent predisposition to this disease exists in many persons, analogous, in some measure, to the tuberculous, the gouty, and the rheumatic predisposition, which is liable to be called into action

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[1] Clinical Medicine, p. 910.

[2] Bartlett on Fevers, p. 102.

[3] Am. Journ. of Med. Sciences, Oct. 1845.

[4] Practice of Medicine, vol. i. pp. 327–8.

by various exciting causes, perhaps by almost any cause capable of considerably disturbing the vital functions. Hence its occurrence after fatigue, anxiety, &c. The effluvia of animal excretions, the contagious miasm of typhus, and even marsh miasmata, may act as exciting causes in the predisposed."

Before dismissing the subject of impure water, brief reference may be made to the full adoption by Dr. Parkes of the doctrine that goitre is produced by the use of drinking water containing a marked excess of lime and magnesia. (p. 61.)

Air, its impurities, disinfection, and ventilation are elaborately considered in three chapters of Dr. Parkes' book. Among the modes of purifying an infected local atmosphere, heat is mentioned (p. 78), but hardly enough importance is given to it. Credit is due to Dr. E. Harris,[1] of New York, for his able advocacy of disinfection by heat as one of the most efficacious of all sanitary measures. As shown by him, it is not merely a "surmise" that yellow fever may be checked or annihilated, in a vessel, for instance, by a very practicable and safe elevation of temperature. Dr. Ferguson's[2] case of the Regalia, and Dr. A. N. Bell's of the Vixen and Mahones, are good evidence; and we share Dr. Harris's firm conviction that a high temperature, applied either by steam or by dry heating, will be found to afford the most effectual of all agencies, for the disinfection of ships, hospital wards, or other *foci* of pestilence.

In connection with the impurity of the air of sick rooms and hospitals, due attention is given by Dr. Parkes to the observations of Dundas Thomson, Brittan and Swayne, Schrœder, Eiselt, Chalvet, Pasteur, and Davaine upon the presence of organic forms in the atmosphere. At the St. Louis Hospital, Paris, Chalvet found the dust of a ward to contain from 36 to 46 per cent. of organic matter, principally epithelial cells; while pus cells have been detected in ophthalmic and other surgical wards by a number of observers. Davaine's experiments on the inoculation of splenic apoplexy of the sheep by transferring the bacteria living in the blood of the diseased animal, are certainly remarkable and suggestive.

The causation of phthisis to an extraordinary extent among the men of the Royal and Merchant Navies is in great part ascribed (p. 92) to faulty ventilation. Dr. Bryson asserts that the disease has appeared even to be propagated by contagion; and Dr. Parkes infers that pus cells were largely thrown off by coughing, and, floating through the air, were received into the lungs by other persons.

The chapters on ventilation in Dr. Parkes' book are very full, and well prepared. Comparing natural and artificial ventilation, he remarks, that circumstances differ so widely, that it is impossible to select one system in preference to all others. In temperate climates, in most cases, especially for dwelling houses, barracks and hospitals, with such powers of extraction as can be got by utilizing the sources of warming and lighting, natural ventilation is the best. Incessant movement of the air is a law of nature. We have only to allow the air in our cities and dwellings to take share in this constant change, and ventilation will go on without our aid. In the tropics, however, where the warm air often stagnates; and in temperate climates in certain buildings, where there are many small rooms, or where sudden assemblages of people take place, mechanical ventilation must be used.

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[1] Report of Fourth National Quarantine and Sanitary Convention. Boston, 1860, pp. 219–238.

[2] Royal Med.-Chirurg. Trans., Vol. VIII.

Facts, figures, and excellent illustrations abound on the pages of Dr. Parkes' fifth, sixth, and seventh chapters, upon food; its nature, use in health and sickness, preparation, adulteration, and inspection. We resist the temptation to make large citations.

On the subject of "food for the sick" (p. 150), it is observed, that "fixed scales of diet for the sick must be used in hospitals for convenience; but the innumerable wants of the sick can never be compressed into three or four beds of Procrustes; and as the treatment by diet is better understood, the fixed diet tables will gradually become mere outlines, which will be filled up by orders for each special case." It may be allowed us to remark upon the obvious tendency of modern practice to improve the *quality* of nutriment in the diet of the sick. It may be believed, contrary to the prejudices and early teaching of the present generation, that the cases are very few indeed in which occasion exists for really diminishing the amount of nutritious material given to an invalid. It is the *state* of the food that needs modification, especially during illness; it must be liquid, or nearly so, but it may be concentrated; often in sickness it requires to be more so, and to be given, as all know, at much shorter intervals than in health. This expression may seem trite; but we are quite confident that "low diet" is, in inflammatory and febrile complaints, not unfrequently still abused by practitioners of routine. We have seen a hot skin and bounding, rapid pulse, in an individual of moderate systemic strength, give way to moisture and coolness upon the imbibition of two or three ounces of beef tea, without any other diaphoretic. And, while battling against "stimulism," as against any other exclusive system, we regard support by nourishment in sickness as a part of the duty of the physician not yet fully appreciated everywhere.

Dr. Parkes makes a sound practical remark in regard to the employment of concentrated articles of food by the soldier. From their smaller bulk, they relieve the sense of hunger more slowly than ordinary meals. The best way to obviate this is by making them into thick soups, if practicable; as, otherwise, the soldier will be tempted to eat two or three days' allowance at once.

On the topic of alcoholic beverages, our author judiciously avoids extreme statements and opinions. While he goes beyond the prevailing sanitary view of this country in admitting the frequent innocence if not utility of wine and beer, he insists and argues most forcibly against the use of ardent spirits in health, even in the emergencies of war, maritime life, or Arctic exploration. For the grog ration, on land or sea, nothing sound can be said, since it is inferior to warm coffee or tea as a preservative against cold and wet, while it heightens greatly the dangers of extreme heat; and against it are to be urged the diminution of the vital and active energy of the soldier, labourer and sailor, and the constant and imminent danger, under any checks whatever, of ruinous intemperance. One useful property of wine is mentioned, which has been often overlooked; that it is a potent antiscorbutic. Suggested by Lind and Gillespie, Dr. Parkes considers that this has been made certain by both French and English experience.

Chapter VIII. is upon soils, topographical reports, and choice of sites. Although short, it contains a great deal of information in a condensed form. Our readers may judge of Dr. Parkes' succinct mode of giving practical directions, by the following paragraphs, from a section upon "rules for choice of site." (p. 261.)

"If a site is to be chosen for a permanent station, see it at all times of the year and of the day; in the wet as well as in dry season, and at night as well as by day.

"*Height of Hills.*—Get the exact height of the hills from an engineer; or, failing this, determine it by the barometer. (See Meteorology.)

"*Geological Order, Direction, and Dip of Strata.*—Learn the position in the geological series, if possible, the direction of the dip of the strata, and the course of the fall of water.

"*Mechanical and Chemical Composition.*—Get as much information as possible in the way already pointed out; even a superficial examination is much better than nothing.

"*Analysis of Water.*—Analyze the water, and determine its quantity.

"*Subterranean Course of Water.*—Always choose a spot from which there is drainage, and into which there is no drainage.

"*Temperature, Dew-point, and Winds.*—Take as many temperature observations as possible, and dew-point determinations, and learn the direction of the winds, and, if possible, their force and temperature. Attend to all the rules already given on conformation, vegetation, and composition of soil, and dig holes of ten or sixteen feet in depth at various points. If possible, never take ground which has been much disturbed, and always avoid sites of old dwellings. A site under trees is good in hot countries, but brushwood must be avoided."

On habitations, in Chapter IX., a few general remarks are made, and the remainder of the chapter is devoted to barracks and hospitals. The largest opportunity for the supply of air is advocated. "I question," says Dr. Parkes, whether even 4,000 cubic feet per head per hour, now assigned by the best observers, will not be found to be far below the proper amount for the acute and febrile diseases." Miss Nightingale's views are essentially approved, as embodied in the following rules:—

"1. The sick should be distributed over as large an area as possible, and each sick man should be as far removed as possible from his neighbour.

"2. The sick should be placed in small detached and perfectly ventilated buildings, so that there is no great number of persons in one building, and there shall be no possibility of the polluted air of one ward passing into another." (pp. 294–5.)

The securing of perfect purity of air is, of course, partly a matter of construction, and partly of superintendence. With detached buildings, the size of an hospital is dependent merely on the facility of administration. When the hospital consists of a single building, the smallest hospitals are the best. This is no doubt sound doctrine.

Sewerage is very well considered in Dr. Parkes' tenth chapter. Diluted sewage is said not to be strongly-fertilizing. It is not profitable to apply it to land unless it can be made to pass over the land by gravitation. The most hygienic proceeding is that adopted at Leicester. The sewage water is received into a tank and mixed with lime. The solid matter is so perfectly precipitated that the supernatant water has no taste, and may be allowed to pass into streams without injury. Unfortunately, the thick part left behind has scarcely any fertilizing power, as the ammonia is lost; and therefore this method is not financially successful. When sewage is allowed to flow over land, it is absorbed in large quantities, and so rapid is the deodorization that no nuisance is created. This has been abundantly proved on the Edinburgh meadows, and elsewhere.

The plan of allowing the solid and liquid excreta to pass into boxes or tanks, which are emptied daily, and applied to land without further treatment, is said to be profitable. In England and at Baden it has been successfully carried out in barracks. The "dry system" is coming into great use in India. It could only be extensively carried out in a country with plenty of labour. One common method is to mix some deodorizing substance with the soil before its removal; dried surface earth (especially of clay or marl) has been strongly recommended for the purpose. In Paris and some other continental towns, a mixed system is in operation. The receptacle is pierced with holes, through which the urine passes and flows away in sewers; the solid soil is retained in the receptacle, and is periodically removed. For deodorization upon any similar plan, the carbolates and sulphites of lime and magnesia are considered to be the best materials.

Exercise and physical training occupy one chapter in Dr. Parkes' volume; and clothing, and weight of dress and accoutrements, and the modes of carrying the weights, two more. We pause only upon a few remarks (p. 379) as to the effects on health of the "regulation method of carrying the ammunition and kit."

> "If the pack and pouch are much worn, the men suffer in health, and there is a loss of service to the State. Observant army surgeons have long been aware of the fact, and of late years the greater accuracy of diagnosis enables us to trace more perfectly the influence of faulty accoutrements. The older statistical returns of the army cannot be referred to as evidence, as the nomenclature employed (Cullins) was not accurate; the different kinds of heart diseases were not distinguished, and emphysema of the lungs was not included."

Dr. Maclean, Professor of Military Medicine in the Army Medical School, declares that a large amount of inefficiency, from diseases of the lungs, heart, and great vessels, is due to mischievous constriction of the chests of soldiers, at the time when there is demanded of them the maximum of exertion. Both heart and lung diseases are more common among young than old soldiers. Of 100 men discharged under two years' service, heart and lung disease together constituted in one year 47.85, and in the other 40.59. We call attention to these statements because they corroborate, in an important manner, like observations made in our own army hospitals, and recorded recently in this journal, in regard to the validity of which some doubt has been entertained even by army medical officers. Should no diagnosis of heart-disease among soldiers be admitted without palpable valvular murmurs or signs of enlargement, we are satisfied that gross injustice will often be done to individual health, with a corresponding sacrifice of economy to the service on whose behalf the error is committed.

After an elaborate description of the meteorological instruments used in the British army, and some remarks on meteorology, the topic of the atmospheric conditions of climate is very generally but philosophically treated by Dr. Parkes in a short chapter. A more directly practical one follows upon "the Prevention of some of the important and common Diseases in the Army." This is well worthy of careful study; but we can notice only a few points. Dr. Parkes states it as a "fact," about which he does not in his text suggest a question, that "the agent or poison which causes yellow fever is portable, can be carried and introduced among a community, and is increased in the bodies of those whom it attacks" (p. 428). With all deference to the high authority of the eminent author, our regard for the evidence, sustained by the unparalleled researches of Dr. La Roche, and the inquiries carefully discussed in our National Quarantine and Sanitary Conventions year after year, compels a most absolute denial of the latter part of his "fact," namely, that which in a note he calls the "strict contagion" of yellow fever. Accepting hopefully the qualifying sentence—"Still it appears, that if men leaving an infected place, or ship, pass into places well ventilated and in fair sanitary condition, they seldom carry the disease"—we must urge that this could only represent the overwhelming preponderance of American evidence, if for the word "seldom" we were to substitute an emphatic *never*. A wave of contagionism has been passing over British medical opinion during the last few years; it is no more than candid, if it appear dogmatic, to say that sanitary science will gain more rapidly when it has spent its force.

A somewhat similar strain of remark is made by our author in regard to the mode, origin, and propagation of cholera, but with less positiveness of opinion. Without excluding other modes of transmission, that by the choleraic stools, especially when putrefying, their influence being conveyed by drinking water and by the air, is considered to be proved. A wider generalization will, hereafter, be understood to include this and all the other facts concerning the spreading of cholera by human intercourse; namely, the promotive influence of *all animal decomposition* in sustaining and developing the agency of the specific cause of cholera, whatever this may be.

Erysipelas also, it is stated unequivocally in the work before us (p. 438), is well known to be, in hospital wards, transmitted from patient to patient. Cannot all such supposed occurrences be at least equally well accounted for upon the simple view of local infection? We will leave this, although with strong convictions, as a question.

Passing over a judicious chapter of two pages on the "Disposal of the Dead," and an almost equally short and general one on the large subject (therefore designedly almost excluded) of "Individual Hygienic Management," we regret being obliged to mention merely, though with decided commendation, the last chapter of Dr. Parkes' first book, upon Statistics. It is a very well digested summary of the knowledge wanted upon that important and difficult topic by medical officers of the army, or by physicians and sanitarians anywhere.

Book II. is upon the Service of the Soldier, home and foreign. Like all the matter of the work, it is prepared elaborately, with German fulness strengthened by English method and condensation. Let us quote one summary (p. 594):—

> "The chief causes of sickness and mortality in the English army have been, in order of fatality—
>
> "1. Diseases arising from improper and insufficient food, viz., general feebleness and increased liability to malarious fevers, dysentery, bronchitis, &c., and actual production of scurvy and scorbutic dysentery.
>
> "2. Malarious disease from unhealthy sites.
>
> "3. Catarrhs, bronchitis, pleurisy, pneumonia, rheumatism, dysentery (?) produced by inclemencies of weather.
>
> "4. Spotted typhus, kept up and spread (if not produced) by overcrowding and uncleanliness.
>
> "5. Contagious dysentery, arising from foul camps and latrines.
>
> "6. Typhoid and perhaps other fevers, produced by foul camps.
>
> "7. Exhaustion and debility, produced by excessive fatigue—a very great predisposing cause of almost all other diseases.
>
> "8. Cholera, in India especially, and in Turkey. 9. Yellow fever in the West India campaigns. 10. Plague in Egypt. 11. The exanthemata occasionally. 12. Ophthalmia. 13. Venereal diseases."

A *résumé* of the classification and administration of hospitals in war (pp. 596–601), at the close of the volume, has great interest at the present time. A practical precept or two may be noted. It is of great importance, in our author's mind, to keep continually sending patients from the division and general hospitals with the army to the hospitals in rear. This has a good effect upon the army itself, and the sick are often greatly benefited by the removal. Such hospitals "in rear," it is now concluded, should never be the ordinary buildings of the country adapted as hospitals. This adaptation is expensive, and probably always imperfect. Churches should never be taken, as they are not only cold but often damp, and there are often exhalations from vaults. French, Austrian, and American experience is stated to be in favour of having the hospitals in rear made of tents or wooden huts; the huts are thought to be perhaps the best, at least if the winter be cold. Reference upon these and other points is repeatedly made to the experience of our army during the present war, especially as exhibited in Surgeon-General Hammond's work on hygiene.

We take leave of Dr. Parkes' treatise with the repetition of the opinion that it is a very substantial, well-written, and valuable book, likely to have a permanent place as an authority.

Professor Mapother's course of twelve lectures upon Public Health was delivered, free to the public, at the Royal College of Surgeons, in Dublin, last year. They are practically instructive and interesting. From his first lecture we may quote the following instances of the benefit of sanitary reform:—

> "In Liverpool, in 1842, one-third of the labouring population lived in cellars about twelve feet square, sometimes less than six feet high, often without windows, and only lighted and ventilated by a door frequently below the level of the street. Its death rate was 38 in 1846, but now, owing to the philanthropic labours of Dr. Duncan in carrying out improved sewerage, closing of cellars, preventing over-crowding, especially in the low lodging-houses, and separating contagious cases, it has been reduced to 24, or less than two-thirds its former rate, and thus it may be estimated from the population of that city that 4000 lives have been annually saved.
>
> When the Macclesfield Board of Health began its labours, the death rate there was 33; for the last five years it has been but 26, so that 1015 lives have been saved. 28,420 less cases of sickness have occurred."

There appears to be need of popular teaching of preventive medicine in Dublin; since it is stated that of 100 children of the labouring classes born there, but 34 live to be 20, 20 to be 40, and only 14 to be 50; without any deficiency whatever in the skill or zeal of the medical attendants upon the poor. Stunted proportions and scrofulous aspect also show unfavourable sanitary conditions among those who survive in the more crowded and otherwise insalubrious parts of the city. It is agreeable to learn from Dr. Mapother that improvements have already been instituted which will do much to lessen these terrible evils.

In the second lecture of this course, on Air and its Impurities, along with a great deal of very useful information, the *therapeutical* value of pure air is asserted, on the authority of the following language of Mr. Paget:—

> "Of all the remedies I have used, or seen in use, I can find but one thing that I can call remedial for the disease pyæmia, and that is a profuse supply of fresh air. In the three most remarkable recoveries I have seen, the patients might be said to have lain day and night in the wind—wind blowing all about their rooms."

Possibly this *vis medicatrix* of a pure atmosphere may have been too much overlooked. We may be too much afraid of open windows. We have known a patient with typhoid pneumonia, urging and insisting upon the admission of all the air possible from windows and doors, when the temperature of it was but a few degrees above zero Fahr., and have found benefit from acceding to this demand of nature.

An interesting reference is made in Dr. Mapother's third lecture, to the first suggestion by Dr. Benjamin Franklin of an aperture in the flue near the ceiling for the ventilation of a room. This was proposed by him in 1744.

Heat as a disinfectant does not receive from this author, any more than from Dr. Parkes, its full share of appreciation. He questions whether it may not act merely by increasing aerial circulation, although he adds that plague is arrested by a temperature of 120°. Among disinfecting agents, Dr. Mapother regards nitrous acid as especially reliable, particularly to destroy those organic emanations which are the sources of typhus.

In a lecture on Water and its Impurities (Lecture IV.), the same author furnishes a striking illustrative contrast, in the maximum of purity of the Loka, in Sweden, which, flowing over granite, contains but one-twentieth of a grain of impurity per gallon, or of Loch Katrine, now supplied to Glasgow, holding but two and one-third; and, on the other hand, the water of a pump in Liverpool having 417 grains of solids per gallon, or that of Park Crescent, London, containing, as Dundas Thomson shows, 43 grains per gallon of organic matter, chiefly from sewage. The Brussels Sanitary Congress fixed the maximum quantity of solid matter which potable water might contain at $49\frac{1}{2}$ grains per gallon, of which not more than a grain should be organic. Dr. Mapother does not admit, however, that this standard should be absolute, since some of the best waters have nearly double the amount of organic matter thus assigned.

Additional evidence is furnished, from facts in Ireland, in support of the now generally received doctrine, that goitre is owing to an excess in the drinking water of salts, of lime, and of magnesia. In Gorruckpoore the soil upon which many villages are built is so calcareous that some specimens contain 25 per cent. of carbonate of lime, and 10 per cent. of the adults are affected with goitre, and about as many of the children are cretins.

In his lectures upon Food, Dr. Mapother advocates killing animals for food in modes which would allow the retention of the blood, as thus a great deal of nutritive matter is saved. The following are mentioned:—

> "1. Compressing the lungs with air, patented by Dr. Carson, or with water, as practised at my suggestion. The fluid may be forced into the cavity outside the lung by a sharp-pointed tube thrust in between the fifth and sixth ribs, and to which is attached a large elastic bag. 2. By blowing air into the jugular vein, the way horses are often destroyed on the hunting field. 3. By thrusting a knife into that part of the brain known as the fourth ventricle; or, 4, as practised in the abattoirs of Paris, dividing the spinal marrow in the neck. The equestrian people of the American pampas kill their oxen in a way which does not extract the blood, and upon their flesh, usually dried in the sun, and constituting their sole diet, they attain the acme of muscular vigour."

It is correctly observed, that climate may have much to do with the suitableness of such methods of preparing meat; since putrefaction of course goes on more rapidly, with heat, in the moist condition; blood will spoil sooner than flesh. Beef is now taken from South America and Australia to Great Britain, and Dr. Mapother thinks it may be a boon to the poor. Analysis shows for Montevideo beef, as compared with average corned beef, more than than eight times as much nitrogenized substance, although only one-seventh as much fat.

The Lectures, in the course we are now considering, upon Clothing, Bathing, and Physical and Mental Exercise, are interesting and practical. All hygienists must especially approve the recipe for rearing healthy children, quoted from John Hunter: "Plenty of milk, plenty of sleep, and plenty of flannel."

In his ninth lecture, Dr. Mapother treats very well of Sanitary Engineering and Architecture, Hospitals, &c. To his view, the Herbert Hospital, near Woolwich, is the most scientifically constructed edifice of the kind in Europe. It consists of seven pavilions, the ends of which all project into free air, and which are separated from each other by twice their height in distance. There are but two floors to each pavilion. The baths and water-closets are in the free ends, and the latter are thus thoroughly aired. Each ward is 26½ feet wide and 14 feet high, and contains 30 beds; the cubic space for each being about 1300 feet. Windows are abundant, there being one for two beds, arranged along opposite walls; and as the axis of the wards is a little to the east of north, each side will be enlivened by the sun during some part of the day.

As an example of the influence of imperfect *house-drainage* on the mortality of cities, Dr. Mapother mentions Stockholm. Although situated upon small islands, so that abundant ventilation and cleansing would seem to be secured, it has a higher death-rate than any other European city. This is accounted for by the deficiency of the supply of water, not a single house, except the hotels, having a water-closet.

Dr. Mapother expresses a rather more hopeful view of the financial side of the sewage problem than that we have cited from Dr. Parkes. Baron Liebig has asserted that the manufacturers of artificial manures are inimical to the utilization of sewage. A wordy warfare has hence arisen, and the subject is to be specially discussed by the Public Health section of the Social Science Association at its next Congress.

Climatology, especially in reference to England and Ireland, is considered in the tenth lecture of this course, and the Prevention of Zymotic and Constitutional Diseases in the eleventh; Vital Statistics in the twelfth and last. Dr. Mapother adopts without hesitation the doctrine that "typhoid fever is about the most preventable of diseases;" that "there is much greater risk of contagion from the decomposition of the poison in faulty sewers than from the atmosphere about patients, and its progress is much more virulent when introduced by water drank than by air inspired." It is, however, typhus that has always been Ireland's greatest enemy, it being still five times as frequent in Dublin as in London in proportion to the population.

The influence of impure air in promoting consumption has, probably, heretofore been underrated. Dr. Mapother, supported by Dr. McCormac, Dr. Aitken, and others, urges it strongly as one of the modes of morbid causation over which public sanitary regulations should exert control.

Not having space to remark upon the Lecture on Statistics in Dr. Mapother's book, we may observe that such a course, delivered before a public audience in a great city, and afterwards published in an inexpensive form, must do a great deal of good, not only by its suggestions for individual management, but by preparing the popular mind for measures of sanitary reform, whose proposal often meets, among the ignorant, with apathy or even with opposition.

Stewart Clark's work on "The Hygiene of the Army in India" might well have an analytical review to itself. It is interesting and worthy of study for the amount of practical information it conveys in a clear and forcible style and with abundant illustrations.

Air, water, food, conservancy, drainage, supervision, and the construction of barracks and prisons, are successively considered with direct reference to the condition of the British troops in India.

This author inclines strongly to the view that impurity of the *air* is more important, in a sanitary aspect, than foulness of the water; the latter being certainly heightened, to a great degree, by absorption of gases from the atmosphere. Angus Smith estimated the animal matter thrown out in the form of a putrescible albuminous substance, by respiration alone, as three parts in every one thousand of respired air. Mr. Clark recalls the virulent action of inoculated matter in dissecting wounds, to show what destructive properties may attend even the early stage of decomposition of emanations from the human body. Climate and uncleanly habits intensify, in India, for example, such idiomiasmata.

The atmospheric conditions and changes of India are totally unlike anything experienced in our quarter of the world. S. Clark's account of them is full and interesting. There is, during the dry weather, which makes about seven months of the year, a diurnal variation, quite regular. After eight or nine hours of dead calm, from six or seven o'clock P. M. to three or four A. M., motion begins slightly in the air, with puffs from the W. and N.W. By five or half past five A. M., these have grown into a steady light breeze from the W.N.W. This gains its maximum strength about two P. M., and then gradually decreases till six or seven P. M. The dead calm succeeds, in which, as Mr. Clark describes it, "in addition to coolies to pull the punkah (fan) one feels that a greater luxury still would be two or three to do the work of breathing." It is in this period that foul-air poisoning proceeds most silently and surely. Besides, the relaxation of the oppressive calm and heat of the night predisposes the body to be unfavourably acted upon by the lowering of temperature and draught of air that follow. Thus night, or early morning, is the time of greatest depression in fevers (though this is not peculiar to India), and at the same period the brief incubation of cholera may be observed and should be vigilantly met by appropriate treatment.

Clark's statements are very positive and important in regard to the circumstances which most promote cholera in India. It occurs in groups of men,

> "Almost always after the affected have been unduly exposed to foul air from bad ventilation, overcrowding in their dwelling-places, or the massing together of large numbers of human beings, which, even in the open air, will contaminate the atmosphere for some distance, as at large fairs and in large standing camps, where great numbers of people are congregated. After the Hurdwar and other large fairs in India, cholera almost always appears in the villages on the lines of roads leading from them, but the cases are generally *confined to people who have been at these fairs*." (p. 13.)

What an argument against any theory of contagion, however modified, is presented in the words we have italicised above! But Mr. Clark furnishes much more evidence of a similar bearing; some of which mitigates against the idea of almost exclusive *water-transmission* of cholera, so eloquently supported by Dr. Snow. Thus, while the Hooghly River is always intensely filthy, from the sewage of Calcutta and a number of villages on its banks, and from thousands of dead bodies and carcasses of dead animals floating in it; and although the crews of all the ships arriving at Calcutta are supplied with it, not always filtered at all and never perfectly; yet Mr. Clark gives the following statements (p. 80):—

> "I was long connected with ships trading to Calcutta, and was intimately acquainted with the captains and officers in the same service, and never once heard of the cholera breaking out on board in an epidemic form after the ship was fairly at sea. I made ten voyages to Calcutta, and had medical charge of four different detachments of European invalids from that place to England, and never saw any disease among the troops, crew, or passengers which I could at-

tribute to bad water. It is to be observed (and I think deserves some attention) that I always belonged to large, well-ventilated ships, where every attention was paid to cleanliness and comfort, but the water was from the river, as with every other ship."

Instances to the same effect, as our author remarks, might be, in addition to several which he narrates, enumerated to almost any extent. He confirms with emphasis the conclusion of the Commissioners who reported upon the epidemic cholera of 1861 in Northern India, that "mere contamination of the drinking water may cause disease, but will not cause cholera."

Ventilation is, of course, more difficult in the climate of India than even in the summer of temperate climates; the temperature of the external and internal air of buildings being so nearly the same; most of all, in the hours of stagnant calm. In the army tents of India, with twenty-five men in each (a cubic space per man of not more than 125 feet), it is said by Mr. Clark to be even worse than in barracks; but artificial means of ventilation are indispensable in both. Punkahs will set the air in motion, but they do not expel foul air from the interior, nor reduce its temperature. "It is the *plenum* method alone that can afford thorough ventilation in India.

Mr. Clark gives descriptions, in full detail, with wood-cuts, of apparatus adapted to barracks and to tents. The "thermantidote" is a rotary fan or blower, by which air can be impelled through canvas tubes, and distributed at pleasure. A large apparatus of a similar sort, with diffusion pipes in the side walls, or diffusion cases in the centre of the barracks, will change the air most perfectly; refrigeration may be attained at the same time by "kus-tatties" or evaporating screens of sweet smelling grass. Egress openings for vitiated air, it is advised, should be in the roof, by open ridges; from which birds are excluded by wire-nettings. Strong draughts are sometimes urged as an objection to the "plenum" method; but Mr. Clark does not admit its application. "The perfection of ventilation consists in the free supply of air, so completely attuned to, and in harmony with, the frame on which it acts, that its operation is not perceived." In St. George's Hall, Liverpool, as well as in several other public buildings in Europe and in this country, this plan has been used upon a large scale with excellent success. Portable blowers for movable tents are described by Mr. Clark, as proposed by him for India.

One of the greatest evils in India is its deficient water supply; there is too little water afforded for drinking, cooking, and ablution, and its sources are too near the surface, and thus impure. Deeper boring, and the most careful filtration, are recommended; and, particularly in regard to the latter, explicit instructions are given in the book under notice. It is by no means a depreciation of the importance of contamination of water that Mr. Clark intends by the remarks we have already quoted; but merely an expression of his conviction of the primary necessity of a pure atmosphere.

As to diet, the prevailing error among Europeans, and especially the English, in India, has been excess in quantity. Too many meals and too much meat, as well as spirits, have been the rule; now, happily, somewhat amended. Sir Hugh Rose has reduced the spirit ration in the army in India to one half; it would be better, no doubt, to abolish it altogether. The regulation allowance[1] was six ounces of rum every day, besides what the soldier might surreptitiously obtain at the bazaar. Let us here leave Stewart Clark's book, and listen to Miss Florence Nightingale upon this and allied topics.[2]

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[1] Report of Social Science Association, 1863, p. 283.

[2] Ibid.; paper entitled "How People may Live and Die in India."

"So much for intemperance; but not to this, and its kindred vice alone, or to this mainly, is to be laid the soldier's mortality in India, as has been falsely supposed. The diseases from which the soldier suffers there are miasmatic; now, intemperance never produced miasmatic diseases yet. They are foul air diseases and foul water diseases—fevers, dysenteries, and so on. Intemperance may cause liver disease, and put the men into a state of health which prevents them from resisting miasmatic causes. What are these causes? We have not far to look. The Briton leaves his national civilization behind him, and brings his personal vices with him. At home there have been great improvements everywhere in agriculture and in town drainage, and in providing plentiful and pure water supplies. There is nothing of the kind in India."

Well may the same noble reformer assert the truth of the conclusion of the Royal Commission on the sanitary state of the army of India, that "unless the health of the British army in India could be improved, and the enormous death rate reduced, it would be impossible ever to hold India with a British army." The question is no less than how to create a Public Health Department for India—how to bring European civilization into that country; not only for its own sake, but for the very existence of European colonists. That such is possible, and promises, even, to be done, we are glad to be assured by the same authorities, who insist, emphatically, that there is not a shadow of proof that India was created to be the grave of the British race. Should their hopes, even long hence, be fulfilled, it may prove one of the grandest triumphs, not only of applied sanitary science, but of human progress and development. H. H.

ART. XV.—1. *History and Statistics of Ovariotomy, and the Circumstances under which the Operation may be regarded as safe and expedient; being a Dissertation to which the prize of the Massachusetts Medical Society was awarded*, May, 1856. By GEORGE H. LYMAN, M. D. pp. 146. Boston: 1856.

2. *Chapters on Diseases of the Ovaries, translated, by permission, from* KIWISCH'S *Clinical Lectures on the Special Pathology and Treatment of the Diseases of Women; with Notes and an Appendix on the Operation of Ovariotomy.* By JOHN CLAY, Member of the Royal College of Surgeons, Eng., etc. etc. pp. 254. London: John Churchill, 1860.

3. *On Ovarian Dropsy; its Nature, Diagnosis, and Treatment. The result of thirty years' experience.* By I. BAKER BROWN, F.R.C.S., Senior Surgeon to the London Surgical Home for Diseases of Women, &c. &c. pp. 283. London: John W. Davies, 1862.

4. *The Transactions of the Academy of Medicine; containing Ovariotomy.* By E. R. PEASLEE, M. D., LL.D. New York: Bailliere Brothers, 1865.

FEW operations in surgery have struggled up through more determined and persistent opposition to an honourable recognition than ovariotomy. It is but little more than half a century since the first systematic operation was performed, and during that period it has several times been discarded and almost forgotten. Its opponents have been untiring in their opposition, and unsparing in their criticism. It has been termed "belly ripping"

(Liston); "an operation of which it would not do to talk, lest some reckless surgeon should attempt its performance" (Dr. Haen); "a proof of madness in the patient who should adopt, and of crime in the surgeon who should abet, such a mode of suicide" (Scanzoni); "an operation on no account to be admitted into French surgery" (Velpeau); "an operation not to be justified by the most fortunate issue in any ratio whatever of the cases" (Colombat). The operation has, however, found warm and generous advocates at every period of its history. Nearly twenty years ago, on its revival in England by Clay, of Manchester, Blundell wrote him encouragingly, "a few years and I trust it will appear abdominal surgery is at present only in its infancy; but, then, what an infancy! how full of bloom and promise!" Again, alluding to the current criticisms upon the operation, he says: "These men are butting their heads against a stone wall; and the grimaces they make, on feeling the solidity of the materials, are as amusing as they are pitiable. Applauded by all who have honesty and intelligence enough to appreciate your efforts, you may well persevere."

The prophecies of Blundell have to some extent been realized, and abdominal surgery has within the last few years begun to exhibit those evidences of "bloom and promise" which in the prospect so delighted this distinguished obstetrician. It not only claims, but demands a respectful consideration at the hands of every unprejudiced surgeon. It can no longer be passed by with flippant remarks, or repelled by fierce denunciations, but must be accepted or rejected by the same rules which govern our estimation of the value of other operations or remedial measures. It is in this light that we propose to examine somewhat critically the claims of ovariotomy to a permanent position among the recognized legitimate operations in surgery.

The works with which we introduce this review comprise for the most part the history of ovariotomy. The monograph of Lyman is one of the most complete productions of the kind which we have chanced to meet. There is manifest on every page the utmost pains-taking in research, and the most earnest inquiry after truth. Every case seems to have been carefully studied as it originally appeared, and never at second hand. The results of his study are consequently more reliable than the majority of writers on this subject.

The Appendix of John Clay to the chapters of Kiwisch's Lectures on Diseases of the Ovaries is a continuation of the tables of Lyman, and completes the statistical history of ovariotomy to the date of its publication.

The work of Mr. Brown aspires to the rank of a treatise on ovarian dropsy and its treatment. But the portion which particularly interests us is that which contains the record of his experience in ovariotomy. The cases detailed add a valuable chapter to this history.

The paper of Dr. Peaslee was recently read before the New York Academy of Medicine. It is a very elaborately written paper, discussing with vigour, warmth, and marked ability all the various questions which have arisen in the history of ovariotomy. In the last number of this journal, this author has published a series of tables embracing all the accessible cases of ovariotomy which have been performed since the publication of Clay's tables in 1860. The tables of Dr. Peaslee form an appropriate appendix to his paper, and complete this history of ovariotomy to the present time.

We do not in this survey notice the various collections of cases published by authors from time to time, viz., by Phillips, Walne, Cormack, T. S.

Lee, Churchill, Jeaffreson, Atlee, R. Lee, Hamilton, Bradford, &c. The papers of these authors are valuable contributions to the literature of ovariotomy, but as the more elaborate essays and works placed at the head of this article embody all the facts and cases contained in these several monographs, we have found it more convenient to confine our attention to the more considerable works.

As with every considerable operation in surgery we have at the outset the question of priority to settle. The claims that are pressed upon our attention are not those of individuals simply—for the first operators have long since passed from the stage of action—but rather of nationalities. This question has hence assumed an undue importance. We shall doubtless be considered obnoxious to the charge of national prejudice if we pronounce in favour of American surgery. But we are happy to know that in this decision we but repeat the conclusions of the more eminent European writers. In the mind of every unprejudiced person this question was settled by Prof. Gross in his very learned report on Kentucky Surgery, made to the Kentucky State Medical Society in 1852. He proved conclusively that the operations on the ovaries previous to that performed by Dr. Ephraim McDowell, of Kentucky, were not to be classified with those grouped under the head of ovariotomy. The operation of L'Aumonier, of Rouen, so frequently quoted, proved on investigation to be simply the opening of an abscess of the groin, and the incidental removal of the ovary which had suppurated. D'Zondi's case, sometimes referred to as ovariotomy, was in the person of a boy. Mr. Brown, however, still affects to be undecided, and coolly remarks that "Dr. Gross endeavours to show that the earlier operations of L'Aumonier and D'Zondi were not examples of ovariotomy at all." Mr. Spence, the newly-elected Professor of Surgery in the University of Edinburgh, in his recent introductory, was so unfortunate as to state that Lizars "was the first who carried the idea of ovariotomy into practice." It is a sufficient answer to these statements to repeat that all the leading ovariotomists unhesitatingly accord to McDowell the priority. Some over-zealous English writers still claim ovariotomy as an "operation of British origin, as it was first suggested by William Hunter, warmly advocated by John Bell, and first practised by McDowell, an American pupil of John Bell." The first statement has no historical certainty, while it is generally conceded that Plater, Vandenhaaer, and Delaporte, at least, had previously suggested the extirpation of the ovary. However it may redound to the credit of British surgery that the first operator was a pupil of John Bell, the fact will ever remain that the first operation was hailed by the British medical press with scoffing and derision. It is sufficiently creditable to American surgery that it not only took the initiative in reducing theory to practice, but that it has attained a higher degree of success than any other nation.

The history of ovariotomy presents us with a conflict of opinion, first between the advocates and opponents of the operation, and second, among its friends, the operators. The opponents of the operation have from the first boldly taken the ground that ovariotomy is not justifiable, and on this issue its merits and demerits have frequently been canvassed by the ablest members of the profession, and with a degree of learning and ability rarely witnessed on any other occasion. The issue among the friends of the operation has been limited to the merits of the various operative procedures. We shall limit our review to these two issues which will in fact embrace all that is material in the history of ovariotomy.

The opponents of extirpation may be divided into those who reject the operation altogether on theoretical grounds, without regard to facts or experience, and those considerate seekers after truth who base their objections on well-founded pathological deductions, and the results of practice. The former are well represented by Prof. Meigs, who effectually cuts short all argument by the declaration: "I look upon operations for the extirpation of diseased ovary as not to be justified by any amount of success." It were vain to attempt discussion with those who thus dogmatically assert their conclusions, and we exclude them from further notice. Let us turn then to the consideration of the arguments and the teachings of experience which govern the minds of the rational opponents and advocates of ovariotomy.

The first ground of objection to the operation is the uncertainty of diagnosis. The objection has its foundation in the fact that, in repeated instances, the abdominal cavity has been laid open, and either no tumour was found, or it was of such a nature that it was impossible to accomplish its removal. That this argument has great weight is proved by Clay's tables in Kiwisch. First, we have twenty-three operations abandoned because the tumour was extra-ovarian. Of these 16 recovered, 3 died, 4 not stated. In regard to the nature of the tumours, 12 were uterine, 1 splenic, 2 omental, 1 supposed tubal fœtation, 1 obesity, 2 results of chronic peritonitis, 1 mesenteric, 2 tumours could not be discovered, 1 nature not stated. A second table contains no less than 82 cases in which the operation was attempted and abandoned in consequence of adhesions. Of these cases 58 recovered, 24 died. Still further we have 13 cases of attempted ovariotomy, in which extra-ovarian tumours only were removed. Of these cases 11 were uterine growths, 1 mesenteric, and 1 tubular. There were but 3 recoveries in this list; 10 died from the effects of the operation. But even this does not complete the record of failures of diagnosis of a tumour capable of removal. There is a table of 24 cases of partial excision of diseased ovaries too adherent for complete removal. Of this number 14 died, and 10 recovered. Here we have, in a tabular record of 537 cases, 142 failures in diagnosis; or in about 26½ per cent. of the cases. The result of these attempted operations was fatal in 51 cases, or 37 per cent.

With this sad record of fatal errors before us, we must attach much importance to the declaration of Prof. Simpson, "that the strongest argument against the adoption of ovariotomy is the difficulty of making an absolutely accurate diagnosis of the disease." For an error of diagnosis has frequently proved fatal to the patient. Mr. Brown truly remarks, "Its importance, indeed, can scarcely be exaggerated; for whatever be the treatment, the knowledge not only of the existence, but also of the precise nature of the ovarian malady is of the utmost consequence." When, if we contemplate simply the formidable list of diseases for which ovarian dropsy has been mistaken, we might be disposed to yield to the opponents of ovariotomy the whole argument. Mr. Brown enumerates them as follows: 1. Retroversion and retroflexion of the uterus. 2. Tumours of the uterus: a, solid; b, fibro-cystic. 3. Ascites. 4. Pregnancy. 5. Pregnancy, complicated with ovarian dropsy. 6. Cystic tumours of the abdomen. 7. Distended bladder. 8. Accumulation of gas in the intestines. 9. Accumulation of feces in the intestines. 10. Enlargement of the liver, spleen, or kidneys, or tumours connected with these viscera. 11. Recto-vaginal hernia, and displacement of the ovary. 12. Pelvic abscess. 13. Retention of the menstrual fluid from imperforate hymen. 14. Hydrometra. A diagnosis surrounded by so many difficulties would at first glance seem more likely to be erroneous than correct, and the early history of the operation confirms this view.

But the advocates of ovariotomy affirm that such has been the improvements in our means of diagnosis that this argument now has comparatively but little weight. And there is no doubt much truth in the statement, for, if we carefully scan the diseases above enumerated we see that several may be positively excluded by the means of accurate diagnosis which we now command. For example, displacements of the uterus are readily and accurately determined by the uterine sound; pregnancy by the stethoscope or ballottement, or the sound; distended bladder by the catheter; accumulations of gas frequently by anæsthetics; enlargements of various viscera by percussion; hydrometra by the sound, &c. It cannot be denied, therefore, that this strongest of all arguments against extirpation has been considerably weakened by the advancement of our knowledge in the art of correct diagnosis. And the modern history of the operation proves this view to be correct, for the errors of diagnosis are now much more rare than formerly. In his recent operations, Wells has not committed an error in 52 cases; and Tyler Smith erred but once in 14 cases. While we may anticipate that in the progress of scientific improvements the differential diagnosis of ovarian dropsy will become more and more accurate, there is one very important fact to determine before the operation which, apparent in many cases, must, in a certain number, forever elude our positive knowledge. It is this: Can the tumour be removed? By no means at hand, or prospectively to be employed, does it seem possible to decide the extent and character of the adhesions when they exist. If we could believe, with Mr. Erichsen, that adhesions are not an unmitigated evil, even this objection to the operation would, in a measure, be answered; but all experience seems to unite in regarding them as the most serious complications.

A second alleged objection is the dangerous character of the operation. The opponents of ovariotomy dwell with special emphasis upon the necessarily dangerous nature of the wounds and injuries inflicted, and upon the high rate of mortality after the operation. Meigs puts the first objection in the following language:—

> "There are certain medical facts that belong not to us as a body of physicians alone. but which enter into the common treasury of human knowledge, and which no array of statistical results can ever, I imagine, change or abrogate, and it is certainly in the nature of things that wounds, even small ones, of the great cavities are dangerous wounds; and, *a fortiori*, wounds of vast dimensions, and wounds, too, requiring that other deep-seated parts should be cut away and vessels tied within those cavities, are so dangerous, by the common voice and consent of mankind, that I should in vain endeavour to reconcile it to myself that I am bound to do such things, except under the duress and stringent necessity laid upon me by my position as physician and accoucheur. No man's statistics can change or abrogate the opinion of society on this point."

While the general statement is true that wounds of the great cavities are dangerous, it is stated, in reply, that the operation is performed where the conditions are pathological, and not so liable to eventuate in inflammatory complications. However that may be, no candid and unprejudiced mind will be governed, or even influenced, by an objection so arbitrarily stated and that has to be fortified by an unqualified rejection of future experience.

The second objection under this head, that excision of the ovary is to be discouraged on account of its actual fatality, is a rational conclusion, provided the premises favour that view. Evidently the advocates of ovariotomy have regarded this argument as the most serious yet raised, and have strenuously endeavoured to give it a satisfactory answer. The first method of replying to this objection has been to contrast the success of ovariotomy with other serious operations, and thus determine whether or not it is justifiable. Simpson presents this argument in a very instructive table of the mortality after ovariotomy and various other capital operations. On the part of ovariotomy we have the following statistics: Fock, 292 cases; 120 deaths, or 41 in 100, 1 in $2\frac{1}{2}$. Atlee, 179 cases; 59 deaths, 33 in 100, nearly 1 in 3. Simon, 44 cases; 32 deaths, 73 in 100, 1 in $1\frac{3}{8}$. Clay, 93 cases; 29 deaths, 31 in 100, 1 in $3\frac{1}{2}$. The severe surgical or capital operations recognized as legitimate are tabulated as follows: Amputation of limbs by Peacock, 72 cases; 35 deaths, 49 in 100, or 1 in 2. Herniotomy by Cooper and Inman, 622 cases; 296 deaths, 47 in 100, or 1 in 2. Ligature of large arteries by Inman and Phillips, 370 cases; 123 deaths, 33 in 100, or 1 in 3. Amputation at hip-joint in chronic disease by Cox, 24 cases; 18 deaths, 75 in 100, or 1 in $1\frac{1}{3}$. Amputation of thigh by Malgaigne, 200 cases; 122 deaths, 61 in 100, or 1 in $1\frac{3}{5}$. But this comparison is rendered much more conclusively in favour of ovariotomy by a comparison of recent statistics. While there has been but little improvement in the mortality after the various capital operations of surgery, there has been a most remarkable diminution of fatal cases of ovariotomy. Wells reports 15 cases and but 1 death; Brown 15 cases and 4 deaths; Tyler Smith 13 cases and 2 deaths; Dunlap, 19 cases and 4 deaths. The aggregate of cases is 62, with 11 deaths, or a percentage of recoveries equal to eighty-two and one-fourth.

This grouping of statistics strikingly illustrates the comparative merits of ovariotomy. It has always been less fatal, if we exclude the German statistics of Simon, which seem entirely exceptional, and are generally so regarded by good authorities, than herniotomy, than amputation of the limbs, than amputation of the thigh, than amputation at the hip-joint in chronic disease, and of about equal fatality with the ligature of arteries. These operations no surgeon would hesitate to advise under certain circumstances; and those conditions which furnish the basis of an opinion as to the propriety of any capital operation are equal, if not indeed more conclusive, when applied to ovariotomy. When, however, we compare the more recent results of ovariotomy with the capital operations of surgery, its importance and comparative safety appear in bold relief.

There is still another view of this subject which we must not omit to notice. The question of an operation in those capital cases referred to presents itself thus: The disease is of an absolutely fatal character, and an operation gives the patient the only chance of recovery. As Meigs remarks, it is no longer a question of what the surgeon *prefers* to do, but what he *must* do. It was contended, until lately, that this rule had no application to ovariotomy; that the operation was in no sense obligatory. But recently the advocates of the operation have been turning their attention to this aspect of the controversy, and inquiring whether the surgeon may exercise his preferences simply, or whether, on the contrary, he is not compelled by as strong motives as in any given case to operate. This is, we believe, the true ground on which to settle the question. Is it an operation of expediency merely, or does the case present to the surgeon the two alternatives of most capital operations, viz., ovariotomy or death?

It must be borne in mind that ovariotomy is now recommended only in cases quite incurable by other means, and hence it follows that the same rule must apply here as in the most desperate class of surgical operations. In a recent discussion, Dr. Graily Hewitt put this question in its proper light, as follows: "What is the natural history of cases of ovarian disease, such as would be likely to be considered suitable for operation by ovariotomy, where no such procedure is attempted?" In answer to this question, he analyzed 44 cases of disease of the ovaries of such character and condition as, in the opinion of those favourable to ovariotomy, were proper cases for the operation. They were cases in which, from the size of the tumour, its physical qualities, such as fluctuation, the fact of tapping having been performed, or some other distinctive characteristic, it could be stated that they were cases of progressive ovarian disease. The natural history of these cases gave the following result: In 32 instances a positively fatal termination occurred, the ordinary palliative treatment being pursued; in 1 the inference was that the patient died; in 1 the inference was doubtful; in 2 the patients were apparently dying; in 1 the disease was proceeding to a rapidly fatal termination. On the other hand, in 1 case the disease had not reappeared after a tapping 26 years previous; in 1 little progress had been made in 3 years; in 2 the patients were alive after a period respectively of 2 and 3 years; in 2 death took place from ovariotomy; in 1 death took place from an exploratory puncture. The summary of these cases gives 84 per cent. of deaths, the fatal issue occurring within an average of a year and three-quarters, leaving 16 per cent. where life was prolonged by palliative measures. With such an enormous mortality where the disease is allowed to pursue its course, except as modified by palliative measures, the advocates of ovariotomy may well ask, in the language of Mr. Erichsen, If you reject that operation, what have you to substitute for it? We can but conclude that ovariotomy is a legitimate operation, and for the following reasons: 1. Like most capital operations, it is undertaken only in cases which, left to nature or palliative treatment, would almost to a certainty terminate fatally. 2. It is no more fatal than the principal larger surgical operations, and much less fatal than the more important. We might in justice add a third point, viz., while successful surgical operations generally leave the patient *maimed and crippled for the remainder of life, successful ovariotomy restores the patient to perfect health and usefulness.*

The change in professional opinion within the last few years is most significant of the progress which this operation has made in professional favour. Tyler Smith opposed it for twenty years, but is now not only one of its strongest advocates, but one of the most successful operators. West was an opponent, and wrote strongly against the operation, but in the last edition of his *Lectures on Diseases of Women* he has changed his views, and now advocates it. The same changes have taken place in the opinions of many others who occupy positions favourable for correct observation.

Passing from the controversy in regard to the propriety of the operation, we proceed to notice some of the points of difference among ovariotomists.

First. At what period should the operation be performed? It is contended by one party that the operation should be performed at the earliest practicable moment, and before the disease has made any inroads upon the patient's health. Brown believes that the mortality from the operation would be much less if this rule were followed. On the contrary, operators of large experience recommend the opposite course. Erichsen says: "It is proper to perform it when all other means have failed, and when the patient's health is giving way under the extension of the disease." The same opinion is held by Wells, who declares the operation justifiable only "when other treatment was useless, and life was threatened at no very distant period."

The theory upon which operators proceed who prefer an early date is that there is less liability to exhaustion from the operation, and a greater tendency to prompt recovery in healthy and robust persons. The statistics recently published by Peaslee would seem to sustain this view. In 98 cases, 41 were robust, 47 had impaired health, and 10 were "broken down." Of those in robust health, 75.6 per cent. recovered; of those in impaired health, 63.83 per cent. recovered; of those "broken down," 40 per cent. recovered. These figures are very significant, but too much value must not be attached to such statistics, for the condition of the patient was not carefully noted in each case.

The weight of professional opinion seems to be decidedly in favour of delay, and the previous exhaustion of palliative measures. There is much pertinency in the remark of Peaslee, who is a decided advocate of delay, that the operation under these two circumstances is comparable with pathological amputations and amputations for expediency, the former of which gives but 15 per cent. of fatal cases, while the latter gives 40 per cent. Still, it can scarcely be conceded that the local irritation of the growth, and the deterioration of the general health of the patient, are rather conservative or preparatory to the operation than injurious, and tending to increase its dangers.

Second. How far does the existence of adhesions affect the question of an operation? In the early history of ovariotomy the surgeon hesitated when he met these complications, and many considered them insurmountable objections. But in progress of time it was found that where adhesions existed, even to a large extent, recovery frequently took place; and at length we have the question fairly proposed, In what respect do adhesions contraindicate the operation? We find operators entertaining on this point every shade of opinion. Hutchinson, Wells, Brown, and others regard adhesions as always an unpleasant complication. They are not deterred from the operation by their existence in a moderate degree, but yet they believe that they render the case less hopeful. Erichsen, while regarding adhesions as a serious obstacle to the success of an operation, still declares that they are not an unmixed evil. When extensive, they obliterate the peritoneal cavity and destroy the serous membrane, thus preventing or circumscribing inflammatory action. Atlee scarcely recognizes adhesions as a serious complication, but proceeds with the operation without regard to their extent or character. He says: "I am never deterred from operating by adhesions. Unless they are visceral, I think they should not be regarded. Indeed, I think peritonitis is less likely to occur in these cases than when the peritoneum is wholly intact. Its character is entirely changed, and it is no longer a serous membrane." Peaslee is equally decided in his disregard of adhesions, and lays down the rule "that we should not be deterred from finishing the operation by the existence of adhesions," except where they would so prolong the operation in a debilitated patient as to cause death by shock or collapse, or where the attachments to the liver, bladder, uterus, or larger intestines are so firm that they cannot be separated without injury to those organs. His cases have been the most formidable on record, on account of adhesions, and yet all have terminated favourably. He makes a very judicious division of adhesions into the parietal, or those attached to the walls of the abdomen, and visceral, or those attached to the viscera.

It is the first class which he considers as in no respect deterring from the operation, however extensive; while the latter are always to be regarded as serious complications.

We are not prepared to accept the reasoning or conclusions of those who regard adhesions so lightly. However slight they may be, they create the necessity for a certain amount of violence to be expended in their destruction. There must also a certain amount of hemorrhage follow the division of these organized bands, and this has frequently proved an important complication. Nor is it by any means certain that they tend to prevent inflammation, as Erichsen and Peaslee maintain. They are the products of excessive local textural activity, and the changes which result therefrom lead to textural weakness. In other words, every part once affected with the changes resulting from irritation is texturally predisposed to inflammation. But we have no occasion to enter upon a theoretical discussion of these opinions, when we have at hand conclusive evidence of a character that demonstratively establishes the truth. Our most reliable data must be the results of operations, and these are decidedly against adhesions. Lyman gives 92 cases of more or less extensive adhesions, with 48 recoveries, or 52.17 per cent.; and 50 cases non-adherent, with 34 recoveries, or 68 per cent. But Peaslee's statistics (*op. cit.*), which embrace the more recent operations, are even more conclusive. Of 41 cases of extensive adhesions, 60.97 per cent. recovered; of 10 cases of slight adhesions, 70 per cent. recovered; of 16 cases, no adhesions, $87\frac{1}{2}$ per cent. recovered.

There is, again, much diversity of opinion among operators as to the preparatory treatment required. Some almost entirely disregard attention to the general condition of the patient, and merely give a cathartic on the day before the operation; while others attend minutely to all the functions of the body, and secure, by careful preparation, the most favourable state of the patient for the operation. Brown directs a warm bath, repeated on several occasions, to cleanse and soften the skin, and suitable remedial measures of a tonic character, such as steel and arnica. Black gave acetate of ammonia for a week previously, with an occasional dose of hydrarg. cum creta and ox-gall. Atlee administers the perchloride of iron for ten to fourteen days before the operation. While it is evident that no rule of preparatory treatment, adapted to all cases, can be established, yet every judicious operator will attend carefully to the condition of his patient, and adopt such a course of treatment in each case as shall be indicated. Prof. Simpson very truly remarks: "Before exposing your patient to the risk of this, as of any other serious operation, you are, of course, bound in the first instance to prepare your patient, as far as possible, by attempting to raise the standard of health, by means of tonics, and to diminish in some degree the chances of inflammation, by putting her for a time on antiphlogistic diet and regimen." This advice is most judicious.

There is also a difference of opinion as to the temperature of the room, whether it should be raised or disregarded. Clay, Brown, Peaslee, and many others advocate strongly the necessity of maintaining the temperature of the room at nearly a summer heat, with a good supply of moisture. By this precaution they believe that the peritoneum is much less exposed to subsequent inflammation. Peaslee has gone still further, and not only carefully provides that the temperature of the room shall be raised to 80° F., but endeavours to prevent all irritation from handling of the intestines, by a preparation which he terms artificial serum, composed of water Oiv, albumen (white of eggs) ʒvj, and common salt ʒiv, into which he plunges his hands before he introduces them into the peritoneal cavity. Many operators, however, attach little or no importance to this measure, and operate indifferently in a cold or warm room. Simpson remarks: "But such a precaution seems hardly to be necessary; for there is no direct proof that the peritoneum is more likely to be inflamed in consequence of being exposed to the atmosphere at a low temperature than it is when exposed to heated air" He adds: "Those who are in the habit of operating frequently, apparently lose all such great fears in regard to the free exposure and rough handling of the peritoneum."

We cannot regard these precautions as of such slight importance. The mere recovery of a few patients operated upon without due care should by no means establish a rule of practice. No fact is better established than that the truly successful surgeon is he who attends most carefully to all those details preliminary to, during, and after the operation, which avert threatened dangers, and add to the probabilities of recovery. In this artificial serum of Peaslee we have an ingenious and most useful means of preventing irritation of the peritoneum, which must commend itself to every prudent surgeon.

Of the questions growing out of the different operations, we have, *first*, the length of the incision as a subject of controversy. Clay, of Manchester, Walne, Simpson, and others advise a long incision, or one extending above the umbilicus. They are of the opinion that the long incision gives so much greater freedom in the manipulations of the tumour that its disadvantages are more than counterbalanced. Wells, Bird, and Lane, strongly advocate the short incision as less dangerous, and affording in general sufficient facilities for the removal of the tumour after tapping. Wells limited his incision in one case to an inch and a half. It is not difficult to decide this question of the relative merits of the long and short incision. No practical surgeon will adopt exclusively one method, for while it is true that the short incision is generally sufficient, it still occasionally happens that the long incision becomes a matter of necessity. The rule which governs the majority of ovariotomists may be thus stated: *Commence with the short incision, and enlarge it according to the necessities of the case.* Peaslee says:—

> "If the tumour is not adherent, and is small—or if not adherent, and capable of being reduced to a small mass by tapping—a small incision (two to four inches) may answer the purpose. But if there are extensive and firm adhesions (especially if visceral), the incision should be large enough to enable us to *see* them; and if the tumour is large and cannot be much diminished by tapping, the incision must be enlarged to allow its passage through it. I think the only rule is to make the incision *long enough to secure the objects I have enumerated, and no longer.*" p. 37.

The management of the pedicle has been the subject of controversy, and still remains unsettled. The question presented for solution may be thus stated: How can the hemorrhage be effectually controlled with the least danger of exciting peritonitis? The early operators treated the pedicle, according to the general rules of surgery, by applying a ligature, and drawing it out at the most depending part of the wound, and some modern operators, as Clay, still imitate them. Although this method gives a very fair percentage of cures, it has been alleged that it involves great danger of peritonitis by the irritation which must be produced by the ligatures. To avoid this danger, two general methods of procedure have been proposed; *first*, by our appliances control the hemorrhage and then return the pedicle to its place and close the external wound; and, *second*, bring the stump of the pedicle out at the external wound and fasten it there.

There are two methods of treating the pedicle and returning it. 1. By dividing it with the ecraseur; and, 2. By applying a double ligature and cutting the extremities short. The ecraseur has been frequently employed for division of the pedicle, especially by Atlee and Wells, and with favourable results. It has not, however, been accepted by operators generally, and has even been abandoned by those who have had the most experience in its use. The truth is, the ecraseur is not a sufficiently reliable means of controlling all hemorrhage to make it a safe instrument for this operation. In Hamilton's case the bleeding was very copious, and in Henry's case fifty ounces of bloody fluid were found in the cavity of the peritoneum after death. The escape of a small amount of blood into the peritoneal cavity endangers the patients to a degree that forbids the employment of doubtful hæmostatic agents.

The second method of treating the pedicle and closing completely the external wound deserves more consideration. As early as 1829, David L. Rodgers, of New York, in removing an ovarian tumour applied a ligature to the pedicle, cut short both extremities of the ligatures, returned the pedicle into the abdomen, and closed the external wound. His patient made a good recovery. It was afterwards repeated by Billington of New York, Siebold of Darmstadt, Fergusson of London, with perfect success. Recently, this method has been frequently repeated, and with such a degree of success as to entitle it to a most important place in the history of the operation. The objections to the ligature are: 1. That it will, by irritation induce peritonitis; and, 2. That there will be a slough of the extremity of the pedicle which will give rise to local and general symptoms by the decomposition which will occur. Peaslee, who discusses this subject in a very able manner, denies the validity of both assertions. It does not appear, by his showing, that deaths from peritonitis are any more frequent in cases treated by the ligature than by other means. The pedicle becomes inclosed in the exudation, and all irritation is early prevented. In regard to the sloughing of the stump, he holds that there is no proof that the pedicle sloughs. He thus explains the changes that occur: "As the portion of the femoral artery below the ligature, in a case of flap amputation of the thigh that heals by first intention, is surrounded by exuded plasma and kept alive in spite of the constriction, so that when the ligature even cuts it off entirely by exciting ulceration, it does not slough, but becomes blended with the surrounding tissues and organized exudation—so here, I suppose, the constricted portion of the pedicle is inclosed in the exudation and kept alive. In some cases, however, the pedicle seems merely to become atrophied, and the ligature slips over the end." In support of this opinion, he states that the autopsy of a patient dying after removal of the greater portion of the uterus, in his own practice, "showed the stump included in the double ligature not to be sloughy; but, on the contrary, to be alive and nearly healed over by the exudation (just sufficient to afford the required amount of material) which had been poured out. Nor was there any trace of inflammation in the vicinity of the stump." The view here taken is rational, and the evidence well nigh conclusive of the nature of the changes in the pedicle. Certainly, the results of treatment by this method are very satisfactory, and strengthen the conviction that it will yet be the accepted method of treating the pedicle.

The second method contemplates withdrawing the pedicle from the cavity of the peritoneum, and fixing it externally. This has been done by the ligation, by pins, and by the clamps. The former method is now rarely resorted to, nor does it differ in principle from the latter, which is the subject of much dispute. The principal advocates of the clamp are Wells and Brown, and they report the most gratifying results, viz., 70 per cent. of recoveries. In the opinion of Wells, the clamp prevents absorption of the putrid matter from the sloughing stump, and the peritonitis connected with the effusion of fibrin around the latter. In his experience peritonitis is rare when the pedicle is retained outside; 1 case in 9 is the ratio in his recent practice. The objections to the clamp are that the position of the pedicle when drawn out at the wound may produce severe traction from the occurrence of tympanitis, &c., causing vomiting and other unpleasant symptoms. Still more unfortunate results may follow if the pedicle remains adherent to the wound, as strangulation of the intestines (Wells), vicarious menstruation from the stump, &c. (Brown).

It would not be prudent, with our present experience, to attempt to decide as to the merits of these operations, viz., the ligature cut short, the pedicle undisturbed, and the external wound closed, and that which involves the withdrawal of the pedicle and its retention in the wound either by the clamp, or pins, or by ligature. Each gives a fair proportion of cure. It is quite certain that the complete closure of the wound is most desirable, provided the hemorrhage is properly restrained, and no new source of irritation is added. But we must await the further teachings of experience, for theory will avail little in establishing rules of practice.

In the final closure of the wound we find operators differing widely. The point of principal interest is as to including the peritoneum by the sutures. Brown is quite indifferent; Clay does not include it; Wells does include it; Peaslee includes it, and regards this as one of the most important points in the operation. In our opinion it is clear that the edges of the peritoneal wound should be carefully united. If they are allowed to separate, suppuration may occur within, as suggested by Peaslee, or the intestines may adhere to the wound, as proved in the experiments of Wells. Nor has any unpleasant results followed the inclusion of the peritoneum by the ligature.

The after-treatment presents two or three points of interest, which we must notice in conclusion. The importance which has been attached to opium as an antiphlogistic remedy, especially in idiopathic and traumatic peritonitis, led to its use in the after-treatment of cases of ovariotomy. But its reputation was not sustained, and it is almost entirely discarded, except as an adjuvant. It is too liable to induce nausea and vomiting. Clay still gives it in large and repeated doses, but operators generally use it very sparingly, and only so far as is necessary to allay excitement and secure sleep.

When symptoms of pyæmia (very properly termed septicæmia by Peaslee) occur, due to decomposition of fluids in the peritoneal cavity, he has been accustomed to inject medicated fluids into this cavity and thoroughly wash it out. He first injected a solution of chloride of sodium (ʒj to Oj), using at once one quart of the fluid, and withdrawing it by means of the syringe. He subsequently injected two quarts through a flexible bougie, and then by changing its position, so as to bring the free extremity to a lower level than the one in the peritoneal cavity, it was converted into a siphon, and the fluid readily flowed out. He states that the immediate relief from the first injection was very striking; the dizziness and stupor disappeared, but returned again in eight or twelve hours. The operation was repeated twice daily, and "the patient recovered rapidly from the time when the fetor of the fluid was overcome." He occasionally used the liquor sodæ chlorinatæ (ʒij to Oj). This method of treating the retained and decomposing fluid in the cavity of the peritoneum he has practised in three cases, and all recovered. The last case was treated with injections seventy-eight days, three injections being made daily for twenty days. The remarkable success which has attended this practice entitles it to the most serious consideration of ovariotomists.

We have thus passed in review the more recent literature of ovariotomy, and have endeavoured, with impartial judgment, to establish the present position of this interesting branch of operative surgery. We have recognized it as essentially an American operation, and that too upon the authority and general admission of foreign writers. We have placed it among the legitimate operations of surgery for reasons which are incontestable in the minds of every unprejudiced person. But when we contrast the recent success of Wells, Tyler Smith, Atlee, Peaslee, and other experienced operators, with the best results in any single capital operation, we feel authorized in giving it the very highest rank. What other capital operation has in so short a period advanced to such a degree of perfection? It has fully realized the prediction of Blundell, that its infancy was full of bloom and promise.

S. S.

Art. XVI.—*The Transactions of the American Medical Association.* Instituted 1847. Vol. XV. 8vo. pp. 448. Philadelphia, 1865.

The present volume comprises the Transactions of the Fifteenth Session of the American Medical Association. The papers embraced in it are not without a certain amount of interest, but whether viewed in reference to the importance of the subjects of which they treat or the manner in which these are handled, they by no means approach the standard we should have anticipated in the contributions of an Association presumed to represent the talents, the industry, and the matured experience of the medical profession of the United States.

The session of 1864 was opened by an address from the President of the Association, Dr. Alden March, of Albany, N. Y. The address is devoted in great part to a plain, common sense commentary upon the action of the Association in reference to medical education, and upon the leading measures that have been urged upon its attention as necessary for the elevation of the standard of professional education in the United States.

The latter object was, confessedly, a leading one in the organization of the American Medical Association. Notwithstanding, however, the efforts that have been made, year after year, in its behalf, that entire revolution in the system of teaching pursued by our medical schools, which was anticipated by some, has not, as yet, been brought about. We have, nevertheless, every reason to believe that it is to the agitation of the subject by the Association, and the several elaborate reports made at its successive sessions in reference to it, that we are to a great degree indebted for the many improvements which medical education has of late years undergone in this country—its enlarged scope and greater thoroughness in comparison with what it was in these respects before the Association was instituted.

There is much still to be done, however, before medical education shall be raised to its proper standard. There is not as yet any unanimity of opinion among the most eminent of our teachers in regard to the number of courses of lectures it is requisite the student should attend to prepare him for graduation; the subjects proper to be treated of in each of the courses; the time they should respectively occupy, and the intervals that should intervene between them.

In respect to the prolongation of the annual courses of lectures which, by many, has been deemed necessary to secure an adequate amount of medical instruction, Dr. March remarks that, after many years of medical teaching, his observation has been, and he believes it will coincide with that of other teachers, that it is during the first half of a four months' course of lectures the student is the most attentive, and, consequently, learns with the greatest facility and in the most effectual manner, while towards the latter part of the course he is liable to become weary, careless, and inattentive. Dr. March hence infers that by the mass of students, scarcely more, if as much, sound, permanent knowledge would be acquired during a course of oral instruction extended over a period of six months or more than in one of only four months' duration. To this latter period he is, therefore, in favour of limiting the annual courses of lectures, and would require an attendance upon three such courses as an essential to graduation.

> "Let not these courses," he remarks, "be curtailed at either end a single week, let no partial course or extra attention to any one department be received in lieu of full courses. If all the colleges will agree on this requirement, and faithfully adhere to it, we can see no reason why it may not be accomplished."

Dr. March agrees fully with those who would make the final examination for the degree of Doctor of Medicine one of severity, thoroughness, and entire impartiality.

> "Let the standard of requirements," he says, "have a broad margin, and by no sympathy or false philosophy permit any imperfectly prepared candidate to pass a definite and fixed boundary line."

The report of the *section on "Practical Medicine and Obstetrics"* comprises four papers. The first of these is on "Death from Air in the Circulation, introduced through the Uterine Sinuses," by Homer O. Hitchcock, M. D. The paper consists in a collation and review of the facts and medical opinions developed at the coroner's inquest over the body of a female, who died suddenly during an attempt made upon her to induce abortion, and at the examination, and first and second trials for manslaughter of the individual who was the operator in the case; together with the memoranda of the two *post-mortem* examinations of the body of the victim. The case occurred in Kalamazoo County, Michigan.

That the death in this case resulted from the forced introduction of air into the circulation through the uterine sinuses Dr. Hitchcock infers, 1st, from what occurred during the attempt to cause abortion. The operator, through an instrument introduced into the womb, or, at least, into the vagina, blew air with his mouth, when immediately the woman screamed, threw up her hands, struck at the operator, fainted, and was found a minute or two afterwards blue in the face and insensible; the muscles of the arms and about the neck having a trembling motion. 2d. From an entire correspondence of the symptoms described with such as occur in cases where death is known to have occurred from the accidental entrance of air into the circulation during surgical operations. 3d. From the principal *post-mortem* appearances observed in the case, being altogether consistent with the theory of death from the introduction of air into the circulation; namely, extreme congestion of lungs, entire absence of blood from the left, and nearly so from the right cavities of the heart; the escape of air from the uterus the instant its walls were incised; the marble whiteness of the extremities, and the unusual paleness of the brain and its membranes.

The various objections which might be brought against the foregoing theory are very candidly examined and shown to be untenable. The writer, therefore, concludes that in referring the death of the female, in the case under review, to the entrance of air into the circulation through the uterine sinuses, he is sustained by the facts, both *ante-mortem* and *post-mortem*, while it is the only theory which harmonizes these facts, the only one based upon an adequate cause, and against which no valid objection has been urged.

The next paper is a description, by Dr. H. O. Hitchcock, of a "Modified Ring Pessary" for the treatment and cure of anteflexion and anteversion of the uterus. The modification consists in springing an arch across the anterior third of one of Dr. Hodge's ring pessaries, of such a height and at such an angle as the case in hand demands. The instrument thus modified is, we are assured, very readily put *in situ*, with the arch going up just posteriorly to the arch of the pubis. The fundus of the uterus rides upon this arch and is upheld by it.

> "There is no danger, we are told, of ulceration being caused by the use of the instrument, nor of injury to the lining membrane of the uterus. And if the instrument is properly adapted to the case, it will at once remove all pressure from the bladder."

The next paper is on "The Use of Pessaries," by Augustus K. Gardner, M. D., etc., of New York. Although we do not admire, in many respects, the style of this article, we very fully agree with the writer in his appreciation of the value of pessaries as instruments for the rectification of prolapsus and other displacements of the uterus. They have always appeared to us to be a most absurd and ineffectual means for the attainment of the objects contemplated in their use, while, in many instances, we feel persuaded that they are far more liable to produce injury than good, except, perhaps, when resorted to temporarily to relieve certain painful symptoms or as adjuvants to other and less exceptional plans of treatment. In all our experience with the use of pessaries, of various forms and materials, in uterine displacements, we candidly confess that we have been unable to attribute to them, in any case, the slightest agency in promoting an effectual restoration of the displaced organ, or in securing the permanent relief from suffering of our patient.

We consider that the objections of Dr. Gardner to the use of pessaries are well founded, heterodox as they may seem when compared with the teachings in respect to these instruments by some of our leading authorities on the diseases of females. In reply to the supposed evidence in favour of pessaries, derived from the experience of the profession generally, Dr. G. remarks:—

> "The slight value actually derived from the use of the pessary in any form is deducible from their number. Every gynecologist claims that great benefit is to be derived from the use of this mechanical appliance, but each states that it is only from his own peculiar instrument that the benefit is to be obtained;

every other pessary is valueless or injurious. Appended to this paper we give drawings of 125 different forms of the instrument. They have been in use for centuries and in every form. It will be seen that, whether simple or complicated, the same objections have been made to them all."

Disappointed in not obtaining, from the use of the pessary in displacements of the uterus, the benefits they anticipated, physicians, without apparently suspecting that for the cure of such displacements, and the sufferings to which they are supposed to give rise, all mechanical appliances are alike inadequate, have sought, by changing the form and construction of the instrument, to render it more successful as a means of relief and cure; each of which changes, being in its turn found inefficient, has been replaced by others; and such will continue to be the case until the use of the pessary is entirely discarded, and more rational and successful methods of cure are adopted.

The paper which follows next in order is on "The Relations of Female Patients to Hospitals for the Insane," and the necessity, on their account, of a board of consulting physicians to every hospital. The paper is from the pen of Dr. Horatio Robinson Storer, of Boston, Surgeon to the New England Hospital for Women.

In recent communications to the American Academy of Arts and Sciences, and to the Suffolk District Medical Society, Dr. Storer has stated certain fundamental propositions or laws whose acceptance he believes to be essential to any rational explanation or treatment of the mental diseases of women. These propositions are as follows:—

> "I. In women mental disease is often, perhaps generally, dependent upon functional or organic disturbance of the reproductive system.
>
> "II. In women the access or exacerbation of mental disease is usually coincident with the catamenial establishment, periodical access, or final cessation.
>
> "III. The rational and successful treatment of mental disease in women must be based upon the preceding theories, which Dr. S. claims to be established;
>
> "1. By many analogies, physiological and pathological, in the cerebral manifestations of the human female and that of the lower mammals; 2. By clinical observation; and 3. By the results of autopsies of the insane, both in private practice and, where made with equal impartiality, in insane asylums."

From the above propositions, corroborated, Dr. Storer believes, by the experience of every unbiased observer, we advance, as he remarks, to three plain, practical questions, which are to open up a new, broad, and very fruitful field of obstetrical work. These are:—

> "First. To what extent can the insanity of women be medically or surgically treated?
>
> "Second. Is such treatment at present generally effected or even attempted in insane hospitals? and
>
> "Third. How can these be accomplished?"

To the first question Dr. S. considers that it would be difficult to give a precise answer, the subject embraced in it being comparatively new to the profession. He believes, however, that there can be little doubt, so long as the mental disturbance retains its original reflex character, and has not merged into organic cerebral change, which, he remarks, is comparatively rare in women, we have a reasonable hope of success, nearly as great, perhaps, as in relieving the other reflex disturbances to which the female is confessedly so prone.

To the second question Dr. S. answers in the negative, and assigns as the chief reason why mental disease in the female, dependent upon reflex uterine or ovarian irritation, is not generally treated at hospitals for the insane in the same manner or as successfully, barring only the lessened risk of homicide or of suicide, as in private practice, the following:—

"The whole and sole charge of the patients, medical, moral, and economical, is thrown entirely upon the superintendent of the hospital. This is certainly an advantage in everything concerning the government of the establishment, for it prevents all clashing of opinion—all evasion of duty. It is excellent in every respect, save alone as concerns the weight and the extent of medical responsibility."

"The superintendent, as at present situated, cannot make examination of a female patient, or pursue such methods of treatment as are absolutely required for the relief of many forms of obstetric disease, upon the existence of which her mental malady not unfrequently depends. He is absolutely prevented from this, alike by regard for the patient's welfare, for his own personal reputation, and for that of his hospital. So constantly compelled to see the patient, he appreciates the importance as regards other details of treatment, moral, etc., that he should retain her confidence and escape her fears; he recognizes the danger lest an endeavour to arrive at a proper diagnosis of her disease should seem to the disordered mind as only an attempt at improper and unpardonable liberties with her person, and, should she ever entirely recover her reason, be so represented to friends and to the community by her perverted and imperfect memory."

As a remedy for this difficulty Dr. S. suggests the appointment to every asylum of a board of consulting physicians, composed of men of high character, experience, and professional fitness. Such a board would be serviceable in all cases of insanity, but absolutely indispensable in the instance of insane females.

This subject, as Dr. S. very justly remarks, is one of importance to the community at large, in its relations to obstetric practice and obstetric jurisprudence.

"Obstetric practice," to use his language, "covers legitimately the greater number of cases of female insanity; but it is to hospitals for the insane that the profession must necessarily send many of these patients, and it is to hospitals for the insane that we must therefore look for the most effectual trial of rational methods of treatment, and from them trust for examples of successful cure. For this success they have already, with the single exception alluded to, every possible adjunct: seclusion of their patients from exciting causes; their absolute control as to diet, habits, and whole detail of life; the possibility, so far as skilled attendance is concerned, of carrying out any desired plan of treatment. Were such indorsed by men experienced in similar methods as applied in every-day practice, the superintendent's responsibilities, doubts, and risks would all be lightened, and the measures indicated be readily enough pursued."

"I have intimated," says Dr. S., "that the appointment of medical advisers to insane hospitals would be of advantage to obstetric jurisprudence. We are all familiar with those difficult cases of supposed or alleged insanity in females that from time to time make their appearance in our courts of justice, on writs of *habeas corpus* or otherwise, from asylums, puzzling counsel, medical experts, and judge. Such cases are common enough in private practice, and are found, generally, amenable to treatment. There is no reason that they should still be allowed to serve as excitants of public scandal, or to bring discredit upon hospital management, or to subject their officers to suspicion as venal."

To the paper are appended two resolutions. The first declaring the existence in connection with every insane hospital of a board of consulting physicians to be, in the opinion of the American Medical Association, alike for the interest of the hospital, its medical officers and its patients. The second urging the appointment of such a board upon the managers of our insane hospitals and asylums respectively.

Both resolutions were adopted unanimously by the Association.

The report of the Section on *Materia Medica and Chemistry* comprises but two articles; the first of these consists of remarks by Dr. Edward R. Squibb, of Brooklyn, New York., upon the practical working of the United States drug law.

The purport of these remarks is to call attention to the fact of the maladministration of the act of Congress prohibiting the importation of adulterated and spurious drugs and medicines, and the principal causes of the failure of the law to subserve the important purpose had in view in its enactment. These causes are, according to Dr. Squibb, the neglect of the Secretary of the Treasury to appoint, as the law enjoins upon him, "suitably qualified persons" as inspectors of drugs; and, secondly, the neglect of many of such inspectors "to diligently and faithfully" perform the duties incumbent upon them as prescribed by law.

The next paper is a very interesting one, on "The Naturalization of Cinchona on the Eastern Continent," by Dr. J. Macgowan.

The report of the Section on *Meteorology, Medical Topography, Epidemic Diseases, and Medical Jurisprudence and Hygiene,* comprises six papers. The first of these is on Compulsory Vaccination, by Dr. James F. Hibberd, chairman of the committee appointed at the last meeting of the Association to inquire into the subject.

This is a well drawn up report. The general conclusions in respect to the subject of compulsory vaccination are, in the main, correct; while the recommendations thrown out by the committee are well worthy of such a consideration as shall insure their being carried promptly into effect.

The committee, after a careful examination of the question, come to the conclusion, that, however desirable universal vaccination throughout the United States, of all who are susceptible to the contagion of smallpox, may be, it cannot, at this time, be brought about by any action of the general government.

> "Partial compulsory vaccination," it is remarked, "is attainable now; is already in operation, in fact, in many of the States, and by proper effort of the Association can be gradually extended, so that at no very distant day every one can be required to come under the protecting wing of vaccination.
>
> "The barrier to present general compulsory vaccination is not intrinsic to the affair, but extrinsic and with the people themselves, and consists principally of two leading difficulties: first, a want of knowledge of the facility, safety, and value of vaccination; and secondly, because forced activity, even in the most noble field of self-hygiene, is repugnant to the genius of the American people.
>
> "The second of these propositions is a seeming, rather than a real, impediment to general compulsory vaccination, and whatever character it has rests almost wholly upon the fact contained in the first proposition."

While the American people will not be driven blindly to the performance of any act dictated to them by any authority, give them but light and knowledge:—

> "Convince their judgments that universal vaccination will eradicate smallpox from among them, and leave no other evil in its stead, and no people will so quickly, or so effectually, put into operation, and yield obedience to ordinances that will accomplish such a result."

The measures proposed for adoption by the committee are, first, to instruct thoroughly the profession in all things relating to vaccination, as a safe and innocent prophylactic to the variolous contagion, and the causes necessary to insure the completeness and permanency of its prophylactic agency; and to convince the community at large, through the press and other popular agencies, of the importance and value and certainty of universal and effectual vaccination as a barrier to the admission and prevalence of smallpox.

To carry out these measures the committee recommend the appointment, by the Association, of a general committee of superintendence or central board, with committees, one for each State, auxiliary and advisory to the central board, and to assist within the limits of their respective States to carry out a uniform system of action dictated by the central body.

The next paper is "the Report of the Committee on Military Hygiene," by Dr. E. Andrews. The report is confined exclusively to the effects of the air of overcrowded, unclean, and badly ventilated hospitals, on the health of the inmates generally, on their recovery from disease or wounds, and on the success of whatever operations may be performed upon them.

After a brief notice of the principal sources of contamination to which the air in the wards of military hospitals is necessarily subjected, and the manner in which these sources are increased in activity by overcrowding and the want of sufficient and proper ventilation, the subject of hospital construction is taken up and discussed, more especially, however, in respect to ventilation. The conclusion to which the committee arrived is thus stated:—

> "If an hospital is destined to be permanently occupied with a large number of patients, it should be provided with a system of artificial ventilation by means of a fan blower and steam engine. This should be placed in a convenient position, and from the fan-wheel flues run around each ward, so as to introduce a current of pure air at the head of each bed. In Europe the plan is to cause a current of air to blow in *under* every bed, and thence to arise in a gentle flow around the whole circumference of it, which accomplishes the purpose very well. Probably for a military hospital, where the patients have been all accustomed to free exposure, it would be best to introduce the air in a gentle current just *over* the head of each bed, so as to flow along the patient's face towards the foot of each cot. This would sweep the exhalations of the lungs, and every other impurity, at once towards the centre of the room, and each breath the patient inhaled would be as absolutely pure as the outdoor winds. The impure air should have exit at openings in the ridge or the floor, or both, along the whole length of the ward."

The next paper is on "the Physiological and Dietetic Relations of Phosphorus," by John H. Griscom, M. D., of New York.

Phosphorus is one of the normal constituents of nearly all, if not absolutely all of the tissues and fluids of the body, and of the various secretions. We may, therefore, very safely conclude that "it bears relations to the vitality of the organism of the highest importance," but as yet but little understood. Admitting thus its importance in its physiological relations to the animal economy, it is but fair to infer that the health of the body will suffer when this important element is greatly diminished or allowed to accumulate in excess. For the preservation of health, and the removal of disease when present, it is important that we should understand how to maintain its presence in the different parts of the body in just equilibrium, or when in excess or deficient to reduce or replenish it.

The entire subject is very ably handled in the paper before us. The facts known in respect to its physiological relations are fairly and clearly stated; some of the pathological conditions to which it is probable that its deficiency at least may give rise are hinted at, and the necessity, by a proper diet, of keeping up or restoring the normal amount of phosphorus and its compounds in the blood and tissues to ward off disease, on the one hand, or, on the other, to ameliorate or remove it when present, is discussed, so far at least as the materials for its investigation have thus far been furnished.

The paper which follows is a "Report on the Medical Topography and Epidemic Diseases of the State of Rhode Island, by Dr. Charles W. Parsons.

Although when taken by itself, without reference to the medical topography of the several portions of the State, an account of its prevalent diseases is not adapted to throw much light upon their etiology, yet, with the view of directing attention to the report itself for the needed information upon these points we shall briefly run over the several maladies indicated as among the most prominent of those observed in Rhode Island.

The bill of mortality for eight years—1855 to 1862, inclusive—shows that more deaths occurred from scarlatina than from any other of the zymotic diseases. In a series of reports, for ten years and seven months, there were 1,088 deaths reported from scarlatina, or a little more than one in twenty of those from given causes. The deaths from this disease have diminished each year from 1858 to 1862. In these same years diphtheria has increased, replacing, as it were, to some extent, scarlatina. The month of greatest mortality from scarlatina was March; of the least, September; the monthly mortality increasing with nearly equal gradations as we go in either direction from September. The deaths by scarlatina were found to be more numerous in proportion to the whole number of deaths, in Americans than in foreigners and their immediate offspring.

Deaths from diphtheria began to be reported in 1858, and rapidly increased in number, more than doubling each year, until 1861, and then lessening somewhat, but still continuing numerous.

> "Diphtheria," as observed in Rhode Island, "is a disease confined to no age, though much more common in children, or between the ages of one and fifteen; more frequent in females than in males; causing a greater proportion of deaths in the American than in the foreign class; apparently more severe in the country than in the city, and sometimes attacking particular towns, neighbourhoods, or families, with great severity; prevailing more in the cool months than in the hot."

It is not believed to be very strongly contagious, but according to Dr. Parsons is undoubtedly communicable by inoculation.

> "There is also," he adds, "good reason to believe that without proper ventilation, the presence of cases will produce an infectious atmosphere, which, if concentrated, and favoured by the condition of the persons who are exposed to it, may breed new cases."

Speaking of the treatment of diphtheria, Dr. P. remarks, that all harsh applications to the throat are discountenanced by the best practitioners, preference being given to astringent gargles, ice, and the chlorate of potassa in solution, as a gargle, with a brush, or in both ways. Claret wine is much used, both as a drink and gargle. Dr. P. has seen apparent benefit from a gargle of yeast.

He believes that death in this disease is caused more by asthenia than by asphyxia.

> "The table of zymotic diseases," we use the words of the report, "shows that five-eighths of the deaths attributed to measles, for eight years, occurred in the year 1858. The only epidemic of the disease within that period beginning in

December, 1857, and lasting through half the next year. More than half the deaths occurred in Providence. In that city, and the neighbouring towns, measles prevailed very extensively, though generally in a mild form. Most of the fatal cases were owing to complications or sequelæ—many deaths being ascribed to measles as the primary, and pneumonia, dysentery, or hydrocephalus, as the secondary cause. These were mostly owing to exposure or neglect, from ignorance, imprudence, or poverty. Measles differs from scarlatina or diphtheria in regard to the proportion of deaths caused by it in the two classes, American and foreign. Thus, in the year 1858, the parentage of 69 decedents by measles was specified: American, 19; foreign, 50."

The deaths from measles during ten years and seven months were in the first quarter of the year, 39; in the second, 46; in the third, 41; in the fourth, 10. In eight years, 42.50 per cent. of the recorded deaths by measles occurred in Providence.

"Its variableness, as to fatality if not as to prevalence, is shown," says Dr. P., "by the fact that no deaths from measles were reported in Providence in 1859 or 1860, and only 40 deaths in 1858."

The disease known as cholera infantum in Rhode Island, occurs in all parts of the State, though it is more common and fatal in the city than elsewhere. For the last three years the deaths by cholera infantum in Providence were less than half of those in the State. The adjacent towns furnish their full share, and there is reason to believe that the children in the suburban parts of these, when crowded with the overflow of city population, are even more liable to summer complaint than those of the city itself. Deaths from the disease are reported from some strictly rural towns. In ten years 890 deaths from cholera infantum were recorded; of these 369 were in August, 228 in September, 178 in July, and 80 in October, leaving 35 deaths for the other months of the year. In 428 deaths which occurred during the eight years ending with 1863, 155 were in the American and 273 in the foreign class. Including the kindred complaints, cholera morbus, diarrhœa, and dysentery, during the above years, there died of the four diseases, in Providence, 920 persons; of whom 374 were of American, and 546 of foreign parentage.

Diarrhœa and dysentery we are informed are not always clearly distinguished in popular language, and are often confounded with cholera infantum and cholera morbus, under the general term bowel complaints. Both vary in prevalence from year to year, or from season to season, more than most sporadic diseases do, but especially dysentery. In ten years the deaths by diarrhœa and dysentery in Rhode Island, were 1,114. Of these 379 occurred in August; 274 in September; 167 in October, 126 in July, and only 168 in the other eight months. The deaths according to seasons were, during the first quarter of the year, 41; during the second quarter, 44; during the third quarter, 779, and during the fourth quarter, 250.

Most of the deaths, some seven-tenths, were in children under five years. About one-half were in Providence City—there being more deaths by diarrhœa recorded in the city, and more by dysentery in other places. This arises in part from the more careful distinction enforced by the city registrar; and in part, also, from the more common occurrence of dysentery, and its greater fatality in villages and country towns. In Providence, for the ten years ending with 1861, the entire mortality from cholera infantum, cholera morbus, diarrhœa, and dysentery, has, upon the whole, lessened considerably In the five years preceding 1857, the deaths averaged 147 annual; in the ensuing five years, the annual average was only 103; while in 1862, 98 deaths occurred. In 1854, Asiatic cholera was epidemic in Providence, causing 159 deaths. These are not included in the above statement. Nevertheless, the prevalence of epidemic cholera, it is remarked, was accompanied by an increase in the number of deaths from the other forms of flux.

In speaking of typhoid and typhus fever, Dr. P. remarks, that these two forms of fever are not sufficiently well distinguished to separate them in a tabular summary; and as there has occurred no epidemic of ship or camp-fever within the eight years embraced in his report, he has referred all the deaths reported from both diseases as also from "fever," simply, to endemic typhoid fever. The most striking points, he remarks, developed by the statistics of typhoid fever are these:—

> "It is more common or more fatal in the country towns than in the city; it attacks young adults more than persons of any other age, and is most destructive in the last quarter of the year. Of all the deaths in the Rhode Island reports ascribed to typhoid and typhus fever, more than half were at ages between fifteen and forty, amounting to far more deaths at that period of life than were caused by any other disease except consumption. In ten years, forty per cent. of these deaths were in the last quarter of the year."

In Providence, during the eight years ending with 1863, there were 232 deaths from fevers, including typhoid, typhus, bilious, etc.; of these decedents, 151 were of American parentage, and 81 of foreign parentage.

The next paper is a "Report on the Mortality of the City of New York," by Cyrus Ramsey, M. D. The tables embraced in this report are well-drawn up, and cover a period of time sufficiently long to furnish a tolerably correct exhibit of the actual mortality of the city of New York, and the leading causes by which it is produced. In respect, however, to the question as to the relationship of the mortality to the population they are defective. There is no little difficulty in arriving at any certain solution of this question from the bills of mortality, of a city, which, like New York, has always a large floating population, constantly varying in number. So far as we can see, the tables before us present no data from which to determine the number and causes of the deaths which occur among the permanent population separately from those which occur among the transient sojourners in the city. Without this distinction is made, it will be difficult to estimate with any degree of certainty the true sanatory character of the place.

The paper which follows treats of "Some of the Causes tending to promote the Extinction of the Aborigines of America," by Dr. Joseph Kneeland, of South Onondaga, N. Y.

The highly interesting remarks of the author are based upon observations made by him among the Indians of the Onondaga tribe; they are, however, applicable, in the main, to all the aborigines of at least the northern portions of the United States, who have been brought, by the rapidly advancing settlement of the country, into more or less immediate contact with the white races.

The chief causes that are tending to the extinction of the Indians from our midst, referred to by Dr. Kneeland, are their indolence and improvident habits, their intermarriages between members of the same family, and the marriages of persons of immature age; the little care taken of infants; the excessive use of tobacco and whiskey, to which young and old and of both sexes are addicted; their habits of surfeiting and drunkenness, alternating with periods of abstinence and actual want; the extreme prevalence and fatality of smallpox among them, and the impossibility of inducing them generally or opportunely to submit to vaccination as a preventive of variolous infection; the extreme malignancy exhibited by nearly all zymotic diseases when they occur among them; the extensive prevalence of syphilis, scrofula, and all the forms of tubercular disease; syphilis like scrofula often appearing as a congenital affection. The low state of medical and surgical knowledge and skill among the Indians of our northern States and Territories is referred to as another cause tending to their extinction, by allowing their diseases to run on without any attempt to arrest their fatal termination, or accelerating the latter by mismanagement or improper interference.

> "The infusion of white blood into this tribe (the Onondaga) has not added," Dr. K. remarks, "to the physical vigour of its subjects. Perhaps half and quarter-breeds are shorter-lived than full-breed Indian children. The Onondaga mother, who bears children from husbands coming from other tribes, themselves full-breed Indians, are the most successful mothers; rear larger families than those where both parents are Onondagas, and, by consequence, cousins and relations of every conceivable degree. Many of the Oneidas, who have settled in and intermarried with this tribe, show plain marks of both Dutch and African mixture of blood, and are more industrious and intelligent than native Onondagas as a class, but not on the whole more robust and long-lived."

As one of the reasons why acute diseases are so fatal among the Indians, Dr. K. enumerates their ignorance in respect to the nursing and care of the sick; the improper food and drinks prepared for the latter, and the mischievous practices observed in respect to them. As the Indian shall by degrees gain confidence in his "white doctor," and learn to follow his directions as to food and care, it is possible, says Dr. K., that his final extinction will be delayed, and by the same means which have increased the average duration of life among civilized and enlightened communities. But it is much to be feared that—

> "Before the poor Indian has learned the laws of his physical nature and how to obey them, the economy of time and means, industry and the reliance upon his own muscles and broad acres for his support, instead of looking to government to hire his teacher and physician, and for all his wants to be supplied by others, without forecast and plan of his own—before these radical changes in his habits are effected—the waning remnant of the Onondagas will have passed away forever."

The report of the *Surgical Section* embraces five papers; the first of these is on "The Pathology of the Lateral Curvature of the Spine," by Dr. Charles F. Taylor, of New York.

The writer assumes, in the outset of his remarks, that lateral curvature of the spine is not, strictly speaking, a disease of the vertebral column. The curvature, with a single exception, being always accidental, and dependent upon causes entirely extraneous to and generally remote from the spinal column. In other words, the latter is acted upon in such a manner as to cause it to deviate laterally from its normal position.

Dr. Taylor describes six forms of lateral spinal curvature, which differ from each other in their respective location and aspect.

The *first* form is the simplest and most frequent. It is the well-known sigmoid or double spinal curvature. The principal curve is in the dorsal region, and to the right, with its point of greatest deviation nearly opposite the lower margin of the scapulæ. There is a lesser curve in the lumbar region to the left. The latter is a secondary curvature produced by and as a compensation for the first or dorsal curve. This form of lateral curvature is common among school-girls; and in its first stages is simply an indication of weakness of the spinal muscles. In its first stages the spinal column is found to sway easily from one side to the other precisely as any other flexible column, of which the supports are too feeble to hold it permanently erect. If allowed to advance to the second stage, however, the curvature will almost always become permanently fixed to the right. The weakness of the spinal muscles in the cases under consideration is due less to innutrition than to deficient innervation in certain constitutions. In the school-girl, the curvature is due less to faulty positions and inadequate muscular exercise than to an unequal waste of nerve force by excessive study, and other excitants of the brain and nervous system.

In the course of time the spinal column becomes permanently fixed and confirmed in its curved shape and position. The ribs become bent out of their natural form, with a sharp angle behind on the side of the curvature, and a corresponding flattening on the opposite side of the chest.

> "It is this projection of one shoulder, and the flattening of the other, with a similar alteration of the chest in front—forcing the long diameter of the chest from the transverse to become the diagonal—which constitutes the chief deformity in this class of cases. It is the 'growing out' of the shoulder which the patient and her friends are most anxious about."

The *second* form of lateral curvature, in order of frequency, may be called, Dr. T. remarks, the crescentric variety. There is but one simple curve of the spinal column, and most frequently to the left, the point of greatest deviation being always below the longer ribs, or from the ninth to the twelfth dorsal or first lumbar vertebra. The present form of curvature very often occurs in thick-set, large boned, and muscular persons. Dr. T. believes that it is produced by over-action of the muscles on one side the spinal column overcoming those on the other side, and forcing the spine to bend in the opposite direction. Dr. T. has traced the origin of many of these cases to periods of severe sickness. Not a few have originated while the subjects were labouring under long-continued intestinal irritation, the same morbid condition as is often followed by irregular muscular action, as indicated in the production of strabismus, talipes, etc. In this form there is but slight distortion of the shoulders or chest. The young lady and her mother are only anxious about "one hip becoming too large."

The *third* form of lateral curvature is like the first, sigmoid in form, but with the primary and larger curvature in the lumbar region, and the secondary or compensatory curve above in the dorsal region. Dr. T. believes the curvature in this form to be due to a rachitic condition of the osseous structure; the softened bones, at the lower portion of the spinal column giving way under the weight pressing upon them from above. It occurs mostly in subjects of a strumous diathesis. The larger curve being at or below the waist, and the secondary curve being small and compensating, there is but slight amount of actual deformity in proportion to the size of the curvature.

The *fourth* variety of lateral curvature is confined to the upper part of the trunk. The characteristic visible deformity is the unequal height of the shoulders.

> "On examination it will be found that there is a marked difference in the size of the two sides of the chest, and, also, that in respiration the volume of inspiration is much greater on one side than it is on the other. One side will be flattened both in front and behind, while the other side will be correspondingly enlarged."

Though there may be no disease of the lung at the time the examination is made, yet it will be found that, in almost every instance, the patient had experienced a period of delicate health, during which, from partial hepatization of one lung, the other was compelled to perform nearly the labour of both. Thus, the muscular power and the actual capacity of one side of the chest becoming unduly developed, had produced an actual disproportion of lung power, which is kept up after the affected lung had regained its normal function. In the child this state of things interferes seriously with its subsequent development and produces the form of curvature under consideration.

The *fifth* form of lateral curvature occurs in the lumbar region. It is caused by a difference in the length of the legs; the inclination to one side of the pelvis which is thus produced is the cause of the spinal deformity.

The *sixth* and last form of lateral curvature is caused by a relaxation or partial atrophy of the muscles of one shoulder, particularly the trapezius. The curvature in most cases is only apparent, there being little deviation of the spinal column, but considerable deformity. In some cases one shoulder droops so much as to appear ready to slide down the back. The cause of the relaxed and paralyzed condition of the trapezius and other muscles in these cases Dr. T. has never been able satisfactorily to trace. The treatment is said to be generally successful.

The next paper is "A Description of a Lachrymal Probe Syringe," by Dr. F. Macfarlane, of New York. The instrument is proposed as one possessing an advantage over the syringe of Anel. For a description and drawing of the instrument we must refer to the paper itself.

In the paper which follows, Dr. Louis Elsberg, of New York, speaks of an "iridectome," in which he assures us are combined all the most approved instruments hitherto employed in the operation of iridectomy. He has furnished no description or drawing of the instrument, which is a singular circumstance, and calculated to excite suspicion of the correctness of the statement; it at least allows us no opportunity of forming a judgment as to its merits.

We have next a report, by Dr. Norman W. Kinsley, of New York, on "The Treatment of Congenital Fissure of the Palate by Mechanical Appliances." In discussing the subject of his report Dr. Kinsley assumes the following positions, namely: 1st. That the only necessity of any operation in cases of fissured palate is with the view of improving the articulation. 2d. That the operation ~~of~~ staphylorraphy, in all decided fissures of the velum, is without material results in benefiting the speech. 3d. That the only treatment now known which can produce the desired result, is the filling the fissure with an elastic mechanical appliance. This he believes to be accomplished by an elastic artificial velum of vulcanized rubber closing the fissure throughout its entire length, and restoring as nearly as possible in form the natural dome of the palate; it embraces the sides of the fissure, and is sufficiently long to reach during certain muscular movements to the posterior wall of the pharynx, at the same time leaving abundance of room behind, when in its normal position, for respiration and the passage of nasal sounds.

> "Such an instrument as described," Dr. K. informs us, "has been brought to such a state of perfection that he has no hesitation in saying it can be adapted to any case of congenital fissure of the palate that is usually seen, whether complicated with a fissure of the maxillæ or not. It can be made so as to be retained *in situ*, without danger of displacement, worn all the time from the first hour without discomfort, is capable of being raised and depressed and contracted

> upon itself, by the muscles embracing it, and is so simple that a child cannot derange it, to its detriment. Such an appliance renders it perfectly possible for the patient to learn to speak well."

The next paper is a report, by Dr. D. I. McGugin, of Keokuk, Ohio, "On Puerperal Tetanus." Tetanus has unquestionably been met with after abortion as well as after parturition at the full term. Its occurrence under such circumstances has been, however, in a great measure overlooked by our principal obstetrical writers. With the exception, in fact, of the cases published by Dr. Simpson, of Edinburgh, and one or two in the foreign journals, little if anything has been furnished calculated to throw light upon the disease as it presents itself in the puerperal female. It is to further and more extended observations and investigations that we must look for the facts that shall enable us to determine whether there is anything connected with the puerperal state peculiarly adapted to awaken tetanic phenomena, different in its nature from the other causes believed to be those usually active in their production. The frequency and uniformity of the occurrence of tetanus under certain puerperal conditions are circumstances which claim further examination, and a more extended series of statistics. As Dr. McGugin very pertinently remarks, it is by no means inconsistent with its nature, nor incompatible with the law of causation to ascribe to it a twofold origin, or a combination of causes, traumatic and idiopathic, and an examination of the cases of the disease with which we are acquainted seem to a certain extent to favour such an idea.

In the report before us will be found a synopsis of all that is to be found upon record, in reference to puerperal tetanus, embracing an outline of the published cases, and the histories in detail, also, of three cases observed by Dr. McGugin, and of one furnished by Dr. E. T. Hurxall, of Massillon, Ohio. We would call especial attention to this report, in hopes that it may be the means of eliciting further facts throwing light upon a subject of no trifling importance.

The volume of *Transactions* closes with an Essay, by Dr. S. Fleet Speir, of Brooklyn, New York, "On the Pathology of Jaundice;" showing that the yellow colour of the skin is due to the presence of hæmatoidine; being the prize essay to which the Association awarded the gold medal for 1864.

This essay is one as deeply interesting, in respect to the nature of the inquiry it embraces, as it is important in respect to the general results at which the investigations of the author have arrived. We can afford room only for the conclusions of Dr. Speir, which we shall give in his own words.

> "1st. There is no sufficient proof of the reabsorption of the colouring matter of the bile: it is not found in the blood, and cannot, therefore, occur in the urine or skin unless formed in these organs from elements derived from the blood.
>
> "2d. Effete hæmatine, a substance from which the liver derives the colouring matter of the bile, does exist in the blood. It is a function of the skin to aid in the removal of this metamorphosing hæmatine which, as it passes through the skin, changes into hæmatoidine.
>
> "3d. The tests used for the detection of the colouring matter of the bile are not reliable on account of similar colour-tests being yielded by hæmatoidine. To distinguish between these substances we must refer to their source, and in doing so we find in some cases of jaundice there is discovered, at *post-mortem* examinations, an entire absence of bile in the intestines, gall-bladder, and gall ducts. There is here then no source from which the bile could be reabsorbed into the blood; and, if not reabsorbed, it could only occur in the blood from retention, and if retained, it ought to be detected.
>
> "Now, if it is not possible for us to detect the colouring matter of the bile

in the blood, it is fair to conclude that it does not exist there: and if it does not exist in the blood, how can we expect to find it in the tissues and secretions? and why should the blood impart the yellow color in question?

"4th. Hæmatoidine is a substance very readily derived from the hæmatine of the blood. It is a metamorphosing substance which, even in health, is in part carried off by the skin. This substance was found to be abundant in the skin and tissues examined microscopically. From this it would appear that the colouring matter found in the urine must have been derived from the metamorphosing hæmatine of the blood, and was also hæmatoidine.

"5th. It is probable that the colouring matter of the bile is never reabsorbed in sufficient quantity to produce general jaundice. This affection is to be attributed to the presence of an undue amount of hæmatoidine in the skin and parts affected.

"Finally. All cases of jaundice, with the exception of those produced by poisons acting upon the blood and those occasioned by nervous shocks, may be included under one common cause, viz: a defective action on the part of the secreting substance of the liver, in consequence of which the elimination of the metamorphosing hæmatine is arrested, and the skin and kidneys are required to effect its removal.

"Jaundice arising from blood-poisons, nervous shocks, &c., must be attributed to the accumulation of degenerating hæmatine in the blood to such an extent as to require an increased action on the part of the skin and kidneys for its removal." D. F. C.

ART. XVII.—*Die Krankhaften Geschwülste. Dreissig Vorlesungen, etc.* Von RUDOLPH VIRCHOW, etc. etc., Zweiter Band. Erste Hälfte. 8vo. pp. 288. Berlin: Hirschwald, 1864.

Morbid Tumours. Thirty lectures, &c. By RUDOLPH VIRCHOW, etc. etc. Vol. II. Part 1st. 8vo. pp. 288. Berlin: Hirschwald, 1864.

IN the January number of this Journal we passed in review the first volume of these lectures. The first part of the second volume is now before us, and we propose to continue our survey without waiting for the completion of the work, which will be necessarily somewhat delayed.

The opening lecture is upon the Osteoma, or bony tumours. The characteristic tendency of these is to osseous formation; this is the acme of their development, and no mere chance. These have been generally designated exostoses, or, as in the Vienna school, osteoid tumours, but the name osteoma, first applied by Hooper, seems the best. The distinction between the osteoma and the ossifying enchondroma, fibroma, lipoma, and many other tumours, in general is easily made, since in the osteoma we recognize ossification as the regular typical, we might almost say necessary, result of their development. There is, however, preceding the stadium of ossification, one presenting the type of cartilage or of connective tissue; but this is only an initial stadium, and the tumour, as such, must be judged of at the time of its maturity. The same combination forms which we have noticed in our survey of the preceding volume occur here; and these will, of course, obscure the diagnosis and the classification in some instances. The osteoma resemble in their development the bones of the skeleton itself, and we find not unfrequently a formation analogous to that of the long bones; that is, a cancellated structure, a medullary cavity, and a medulla.

From this point of view, therefore, we can divide the osteoma into three classes: 1st. Osteoma durum, s. eburneum, where there is only osseous tissue, vessels and a periosteum. 2d. Osteoma spongiosum, where the osseous substance is of a spongy character, the interstices of which are filled with marrow. 3d. Osteoma medullosum, where the medullary cavities are large, and where the medulla itself often forms the larger part of the growth. These divisions correspond in a measure to those of earlier authors, viz., exostosis dura, s. eburnea, exostosis spongiosa, and spina-ventosa. A much more important division of osteoma, however, is that into hyperplastic and heteroplastic, inasmuch as osteoma are at one time entirely homologous, proceeding from an excess of formation in bones already existing, and at another completely heterologous, showing themselves in parts which have no normal tendency to the formation of bone. They differ materially from the enchondroma of which we have already spoken in one respect, viz., the heteroplastic osteoma are very rare, and when they occur they have no special importance, nor are they of a malignant character, the converse of which is true with regard to the enchondroma, and the osteoid chondroma. Both forms proceed from a matricular tissue, analogous to the connective tissue, or to cartilage, or medulla, or some other correlative form of the connective tissue.

In the consideration of the hyperplastic forms or the exostoses as they are generally called, we have, proceeding upon the genetic principles of division, first the *cartilaginous exostoses.* Outgrowths of ordinary osseous matter, whether of a more compact or of a more cancellous structure, are found upon the bones, and the surface of these growths is covered with a thin layer of cartilage in the same manner as the articular extremities of the bones. This cartilaginous layer grows on that surface which is applied to the bone, and develops new layers of cartilage, which in their turn first calcify and then ossify, giving rise to new layers of bony substance. Of their origin we know nothing further, nor can we say with definiteness whence the cartilage comes which produces this development. It may extend laterally from the bone in various directions, as in the exostosis of the neck of the scapula, or it may take place at the same time outwards and inwards, as upon the bones of the skull. Experience shows that they occur at points where cartilage continues to exist for a long time, at the union of the epiphysis and the diaphysis of the long bones; and hence, it may be that from some irritant affecting the surface an abnormal growth is developed. Cartilage is also sometimes developed in the periosteum, and in this way it may sometimes be accounted for; still, another source may be original cartilage; and from this source forms, such as the *pelvis spinosa* of Killian, may proceed. The spine, from whence the name proceeds, is found generally at the point of the pelvis where the three bones, the ilium, the pubis, and the ischium, originally come together, and where originally there is a layer of cartilage. Some accoucheurs think that these may, under certain circumstances, injure the pregnant uterus and lead to its rupture.

Another class of exostoses are those which proceed from the connective or from some allied tissue, and of these latter the most important is the periosteum. These exostoses may be so placed upon the bone, that the distinction between the newly formed mass and the old will be very obvious, or the two may be so entirely inseparable, that the line of division can hardly be detected. Many have, of late, designated the former class as osteophytes, and the latter as exostoses. The newly formed layers are at first loosely applied, afterwards become more and more closely attached to the bone, and at length are entirely inseparable from it. The term osteophyte is, however, of much the most general application; the diffuse osteophyte has nothing of the nature of a tumour; they are flat, but extensive bony formations upon the surface of old bones, just as such are produced by a diffuse periostitis. Osteophyte is the most general expression for a cortical or supra-cortical osseous formation; exostosis denotes the more restricted osteophytes, which limit themselves to a circumscribed portion of the bony surface and present the appearance of a tumour. Still further under osteophytes are included the *periostoses* and *hyperostoses*. In speaking of an exostosis, we have reference to a formation with a more circumscribed base, while periostosis denotes a tumour which extends over a much larger surface, and hyperostosis denotes the same condition with regard to an entire bone, or to an entire portion of a bone. The hyperostoses are developed in the most marked degree upon the bones of the face and head. The author cites the case of the son of Forcade, who died at the age of forty-five. The macerated head weighed 8¼ lbs., and the lower jaw alone 3¼ lbs. The bones of the head are also subject to exostoses, and these may be flat or pediculated, and they may occur upon the outer or the inner surface; in the latter situation they have been supposed to cause epilepsy and other forms of convulsion. The tumour is always covered with a layer of periosteum or of dura mater, although it may not be discovered until the specimen is examined microscopically. The process may go on at the same time, both upon the outer and the inner surface of the bones of the skull. The period of duration of the formation has, however, still another effect upon it: as the osteophyte develops into the hyperostosis or the exostosis; so also a spongy formation may be transformed into a more compact substance, and this again into a spongy mass. This change depends upon the existing relations and comparative amount of medulla and osseous tissue, and also upon the vessels. Many osteophytes are originaly porous, some even almost like pumice-stone; such possess large vessels. Afterwards the vessels become narrow; a portion of the fibrous medulla ossifies, and the bone becomes thereby thicker and more compact; still later, portions of the osseous tissue become soft by being transformed into a medulla rich in cells, and the bone thus again becomes porous or spongy. The first and last stages are, therefore, not to be confounded, as the relation between the medulla and the vessels in the two is entirely different; so also the compact forms present two distinct appearances: the one corresponds to the cortical substance of the long bones, and is produced by the cancellous structure filling itself with concentric layers of osseous substance proceeding from a continuous ossification of the medulla (osteosclerosis). The second form corresponds to the dentine of the teeth, and is formed by parallel layers of osseous tissue upon the surface, proceeding immediately from the periosteum or from the surrounding connective tissue: this is eburnation in its most strict sense; sclerosis is therefore secondary—eburnation primary. The former presupposes porosity or sponginess; the latter merely a pre-existing tissue capable of ossification, and this, as a rule, is connective tissue and not cartilage. Thus from the structure we can determine the origin; if we find a concentric system of lamellæ around the vessels, the compact condition is secondary; if, on the other hand, the layers or lamellæ are parallel to the surface, it is primary. This, of course, can be determined alone by the microscope. Microscopically, both conditions may have the same ivory-like appearance. These views hold good, not only for the exostoses of the cranium, but also for those of all the other parts.

The osteoma occur still further in the maxillary bones and in the teeth. The so-called alveolar exostosis of modern times proceeds from the periosteum of the alveolus, and has more the character of a periostosis or a hyperostosis than an exostosis. It commences as an osteophyte filling up the floor of the dental cavity. The extremities also are subject to osteoma. The exostoses of the great toe, though of slight extent, can produce extreme discomfort. Of these there are two varieties: The first, the exostosis subungualis, is seated upon the upper surface of the last phalanx, sometimes upon its inner edge, either under the nail, or at its side; the tumour consists of thick, cancellated, bony substance covered with a periosteum, which sometimes exceeds the bony part in thickness. The second variety occurs between the first metatarsal bone and the first phalanx, and is caused by improper boots or shoes. By pressure the toe is frequently dislocated, and a portion of the articular surface is exposed to direct pressure from the boot; hence arise numerous flat exostoses, and finally the articular surface becomes irregular, uneven, and at last a periostosis is developed; the large bursa may then become inflamed, suppurate, and ulcerate. The whole process is that of a periarthritis succeeding a dislocation. We pass by the other forms of simple exostosis, the movable osteoma proceeding from the periosteum, the osteoma found in tendons and upon the trochlear surfaces of bones—and come to the

Etiology of the hyperplastic osteoma. The exciting cause, according to all experience, is generally mechanical violence, frequently fractures, and the process is of an irritative if not even of an inflammatory character. It is hence often difficult to separate the osteoma from the ossific products of inflammation. As an illustration of this we have the callus luxurians; here a normal physiological condition becomes a permanent pathological product. Other causes are found in the extension of inflammatory processes from the surrounding parts to the periosteum and the osseous tissue, as in elephantiasis and periarthritis. As for constitutional diseases, the author does not acknowledge the influence of rachitis in producing actual osteoma; he has found external periostosis of the cranium, and hyperostosis of the long bones associated with this disease. With regard to rheumatism and syphilis the cause must be found in the local exposure, and not in the constitutional affection; the bones affected are those lying close under the skin with but little protection from external injury. Predisposition also exerts its influence, and this is especially seen in cases of multiple exostosis. One remarkable case is cited of a boy ten years old, where there were sixty-five exostoses. They were all of a cancellous structure, and chiefly upon the long bones and the ribs; they were seated upon the ossifying edge of the cartilage, and belonged to the latest product of the diaphysis. The predisposition may be either hereditary or congenital; it is also marked during the period of the growth of the bones, and again in old age.

We come now to the heteroplastic osteoma, which originate in the soft parts, either from thickened or newly-formed connective tissue. These growths are most frequently found in the membranes of the brain and spinal cord. Upon the dura mater they have attained a length of one to two inches, with a width of one-half to three-quarters of an inch, and a thickness of one-eighth to one-half of an inch. They are most common upon the falx cerebri, and can always be distinguished from the internal exostosis of the calvarium, from the fact that they are always separated from the bone itself by a layer of fibrous tissue. They are very rare in the interior of the central organs, but are found in the structures of the eye, as in the choroidea and the vitreous body, and also in the lung substance. In the latter case they are by no means to be confounded with the ossification of the cartilages of the bronchi, nor with the petrifaction in the substance of the lung or in the pleura. The most remarkable, however, of the heteroplastic osteoma both in themselves and for their rarity, are the small osteoma of the skin. They are generally found in old people in a multiple form, and constitute the smallest medullary osteoma known. They appear as small particles of sand in the superficial layers of the cutis, sometimes extending into the cutis vera. Their microscopic structure corresponds exactly to the larger medullary osteoma; they have a broad ivory-like cortical substance sparingly lamellated with a few parallel osseous corpuscles, and within, a round cavity with serous contents.

In the next lecture the author proceeds to separate from the territory of the sarcoma certain types of hyperplastic tumours, which affect the nerve centres. These are—1st. The psammoma or sand particles of the brain and its membranes. 2d. The melanoma of the pia mater. 3d. The glioma or hyperplastic tumours proceeding from the interstitial substance of the nerve centres. But we must pass over this lecture and proceed to the next and closing lecture upon sarcoma.

All the various tumours hitherto considered as analogous to the connective tissue are capable of transformation, of a further development, either by an increase in the number of cells, or by an enlargement of the individual cells. If the cells still continue to bear the general characteristics of the tissue from which they were developed, the author considers the formation a sarcoma; if, on the other hand, they assume another character, as, *e. g.*, that of epithelial cells, the formation is either a cancroid, a carcinoma, or a cystoma. Sarcoma is, therefore, defined as a tumour whose tissue corresponds, in general, to that of the connective tissue, and which is distinguished alone by the abundant development of cell elements from the more sharply defined species of the group which belong to the same series. There is always the same relation between the cells and the intercellular substance, forming a relatively firm structure, in which vessels are developed, and which is always in connection with the neighboring tissues of the same character; thus, the sarcoma is distinct from all epithelial, carcinomatous, and cystic tumours, for these latter are *always something separate* from the surrounding parts.

The author recognizes the following varieties of sarcoma: 1st, fibro-sarcoma (fibrous); 2d, myxo-sarcoma (mucous or colloid); 3d, glio-sarcoma; 4th, melano-sarcoma; 5th, chondro-sarcoma; and 6th, osteoid-sarcoma. But here, as in the simple tumours, the same formation may present different varieties in different parts; at one point fibrous, at another mucous, and a third cartilaginous, and so on. We might divide them into two great divisions of hard and soft, corresponding respectively to the steatoma and fleshy tumours. The cell development may be so rich that the type of the matrix is entirely lost, and then we have the medullary sarcoma. Either of the above varieties may assume this form, and thus we would have, *e. g.*, a medullary fibro-sarcoma. If we proceeded upon the character of the cell itself, they might be divided into those with large cells and those with small, those with elongated and those with round cells. The development of the vessels may give a peculiar character like telangiectasis, and this being inclined to produce hemorrhage we have the fungus hæmatodes. The sarcoma may be developed in the interior of an organ as an infiltration, an hypertrophy of the organ forming the sarcoma diffusum; or the natural cavities and canals may be enlarged and form a cysto-sarcoma; it may be surrounded by a firm covering or capsule and form the sarcoma incapsulatum. Most frequently, however, it assumes the nodular form and becomes a lobular structure from new growths. If it is seated upon the skin or the mucous membrane it has a polypoid or fungous appearance.

But to turn to the finer anatomical character, the relation between the cells and the intercellular substance determines alone the variety of sarcoma, but not the sarcoma as such. The cell itself determines this, and the number of these gives rise to the medullary appearance, and may lead to the false supposition of epithelial and cancerous growths. The cells in themselves belong, in all cases, to those of the structures of the connective tissue, but they are in a certain hypertrophied condition. The nuclei and nucleoli are unusually developed; sometimes the former even equal the size of the largest normal cells. We find the shapes vary, and we may have star-shaped, round, and elongated cells in the same tumour, or a single form alone. If the round cells are predominant, it may be easily confounded with cancer; if the elongated cells are in the majority, we are apt to call it a fibro-plastic tumour. In the whole range of the study of tumours there is no more difficult task than to distinguish, under certain circumstances, the medullary sarcoma, presenting round cells, from carcinoma. *The criterion lies in the relation of the intercellular substance.* So long as we find the cells capable of evolving intercellular substance, or of maintaining their relation with the intercellular substance, we may be sure we have no cancer, for the cells of the latter maintain themselves distinct. The structure of the sarcoma is never alveolar like that of cancer, where the cells lie heaped together in meshes; on the contrary, each cell is separated from its neighbours by the intercellular substance. The latter may be reduced to a minimum, but the tissue is still homogeneous and not meshy. The danger of confounding sarcoma with cancer is especially great in that form called sarcoma giganto-cellulare, where the cells are multi-nucleated and sometimes so large that they can be detected with the naked eye. In general the cells of sarcoma have the character of parenchyma cells, and not those of superficial cells, as epithelium and cancer, and the entire structure is rather histoid than organoid. We recognize microscopically three forms of the intercellular substance, the homogeneous, the amorphous or granular, and the fibrillar; the latter are found in the fibro-sarcoma, the amorphous in glio-sarcoma. The homogeneous form appears in great variety, sometimes in the more firm fibro-sarcoma, or in the cartilaginous and osteoid forms. The transformation of intercellular substance from one of these forms to the other can nowhere be studied to greater advantage than in the development of sarcoma. All the sarcoma have vessels, and, in most of them, the vessels are distinguished as well by their number as by their size. These may give rise to external transudation as in fungus hæmatodes, or to internal hemorrhage or the formation of a hemorrhagic infarction; hence, in the latter case, formation of pigment may occur from metamorphosis of the infarction, and this pigment is to be distinguished from the actual pigment production, as in sarcoma melanoticum.

Sarcoma are developed, as we have stated, from a matrix tissue of any of the types belonging to the series of connective tissue, and the relation to the simple tumours of these tissues is shown in sarcoma by the fact that the more recent parts correspond entirely in structure to these simple tumours. It is only afterwards that the cells become more numerous and larger. But we proceed to glance at the etiology of sarcoma.

They may be developed very early in life, and may have their seat upon warts, or upon moles and nævi materni. The simple soft warts, flesh warts so called, develop generally the medullary sarcoma, while those warts having pigment develop the melano-sarcoma. The sarcoma preserves somewhat the appearance of the wart, and may have a broad basis or a pedicle. Sarcoma may also arise from an imperfect development or weakness of a part. Paget describes a case where from birth there was an indentation upon the arm, and this spot subsequently became the seat of a sarcoma. The vicinity of the navel is also not unfrequently the seat of sarcoma. Under the same head belong the sarcoma of the teeth. The sexual glands also, at the time of puberty, and the bony structures, at the period of the cessation of growth, are subject to sarcoma. Cases of congenital sarcoma are almost unknown; in general, it is a tumour which belongs to the period of maturity; it is only upon the bones that it occurs during the period of development. Sarcoma may also be developed from the scars of wounds. They may also occur on the skin upon spots which have been exposed to repeated irritation and inflammation. In no other class of tumours is the influence of the original tissue upon the development of the tumour so marked as in the sarcoma. Those produced upon the surface of bones have a marked osseous character; those in the medulla have a soft medullary character abounding in cells; those developed in the choroid coat of the eye generally have pigment; and those in the nerve-centres have the soft character of brain substance, and hence are called encephaloid. Upon the fibrous membranes they possess the fibrillary character, having the elongated cells, and in the glands a pulpy gelatinous fungous character.

In sarcoma we find a remarkable instance of infection, such as the author described in the first volume. The infection proceeds, at first, by contact in the homologous tissue in the vicinity, and hence, as was previously stated, there are frequent recurrences after an operation because the whole of the infected tissue is not removed. Thus the infection proceeds still farther to attack adjoining heterologous tissues; thus sarcoma of the glands (the (breast, testis, salivary glands) extends to the surrounding connective tissue, to the adipose tissue, and to the skin. At a later period the infection manifests itself by dissemination, by the development of new centres around the original one; or, again, metastasis may occur. Secondary or tertiary nodules appear in the lymph-glands, the lungs, the liver, the kidneys, the brain, and in other parts, and these metastases have also the capacity of infecting the approximate structures. The lymph-glands, however, seem to enjoy a special immunity from sarcoma. Not unfrequently organs remotely situated will be the subject of a metastasis, while the intermediate lymph-glands are not affected; the reverse is true in cancer.

The author next considers the course of sarcoma. Inasmuch as the elements of these tumours partake of the nature of parenchyma cells, so do they share the relative persistency of these latter, and the tumours may, therefore, continue for long courses of years. The author has never known a well-established case of spontaneous cure of sarcoma. These tumours may undergo a partial retrogression, such as a fatty metamorphosis; there is no variety of sarcoma that may not be subject to this action, but it is most common with those that abound in cells and that develop rapidly. There is no doubt that the fibro-sarcoma are in this manner made capable of resorption; the parts subjected to this action take on a firmer appearance and show a fibrous structure poorly supplied with cells. In the softer forms, on the other hand, as the medullary or glio-sarcoma, and mucous sarcoma, the parts thus affected have a more pap-like consistency: sometimes there is a partial resorption, and these points undergo a kind of cheesy thickening resembling somewhat the latter stages of tuberculization, and it has been described as such. Another result of the fatty metamorphosis is softening, and this occurs, especially when the fatty development is very great, in the vicinity of large medullary tumours having great vascularity; the walls of the vessels themselves may be attacked, and hemorrhage and ulceration ensue. To be distinguished from this softening, as a result of the fatty metamorphosis, is the ordinary softening, which is not a phenomenon of retrogression, but rather of progression; the cellular portion becomes dominant, and the intercellular substance vanishes; this is generally the precursor of ulceration, but the sarcoma are generally but little inclined to ulceration, although every form may undergo this process.

The prognosis of sarcoma depends upon the seat of the tumour and the disturbances which it has produced, and which, of course, increase with its increased development. But still more important in the prognosis is the question of its infection, although, in general, this is thrown into the shade by practitioners. So long as the tumour presents an innocent aspect, produces no pain, increases but slowly and shows no tendency to ulceration, so long is the operation postponed; and thus the period at which the tumour is really only a local evil, and when it might be easily and entirely removed, is passed over. Meanwhile the infection progresses in the vicinity, metastases may occur, and, when the operation is performed, new nodules show themselves at various points with renewed vigour, and then one begins to question whether the tumour was not after all a cancer! The opinions of observers have vacillated between the two extremes of malignancy and innocency. The author thinks that the sarcoma have a certain period of innocency, but afterwards become malignant; and with regard to this limited malignancy, a certain gradation exists between the different varieties of sarcoma. This gradation may be said to consist of three steps—local infection, proximate dissemination, and metastases to more remote points. Many fungous growths recur after four or five operations; and, on the other hand, even in the worst forms, as in melanosis, there are cases where a permanent local cure follows an operation. In order to make the local cure a protection against dissemination and metastasis, it must be accomplished sufficiently early. Unfortunately the lymph-glands do not often afford the indication here that they do in cancerous affections. The surgeon has, however, two indications of threatening danger from infection: the first is the so-called adherence, which indicates the progress of the tumour from its matrix-tissue into the vicinity, the outgrowth of new portions of the tumour into the neighbouring tissues; the second is the perforation of firm barriers, such as cartilage, bone, fibrous membranes, &c., which have prevented the extension of the tumour. But in determining the malignancy of the sarcoma, we must never lose sight of the individual character of the patient, and also of the organ affected. In general, the malignity is more marked in those sarcoma which are characterized by a multitude of small cells; the form of the cells is of no importance. Sarcoma with the gigantic multinucleated cells offer a most favourable prognosis, while the small-celled glio and mucous sarcoma are scarcely less malignant than cancer. But the character of the organ, its relations to the rest of the body, and especially to the lymph and bloodvessels, is even more important. The same tumour, according to its different locality, and again, in the same locality according to its different relations, may have a different significance. The sarcoma of the mediastina are the largest and most dangerous of all; next to these are certain forms of orbital sarcoma.

But we have already transgressed our proposed limits. The remainder of the volume is taken up with the consideration of melanosis and the melano-sarcoma of the eye. We shall endeavour to lay before the reader, at some future day, the concluding part of the work, in which the subject of sarcoma will be completed. E. T. C.

ART. XVIII.—*A System of Surgery, Theoretical and Practical, in Treatises by Various Authors.* Edited by T. HOLMES, M.A., Cantab, &c. In four volumes. Vol. IV. London: Longman, Green, Longman, Roberts & Green. 1864. pp. 1079, with a general Alphabetical Index and a list of the authors of the work and their contributions.

THE fourth volume of Mr. Holmes' "System of Surgery" has already taken its place as a remarkably successful and appropriate completion of the best library of surgery of the day, or at least of the most instructive representation of the science and art as they are now understood and taught by many of the leading British hospital surgeons.

If it were desirable to make comparisons, we should be inclined to say that the last volume is decidedly superior to its predecessors, and that, in this respect, it only excels the second and third volumes by a still greater progressive improvement, as much in the thorough discussion as in the character and practical importance of its topics. A careful re-examination of the whole work, however, would doubtless lead to an impression in favour of the earlier portions which would be more just to their authors without any depreciation of the admirable papers which are grouped together in the concluding series. At all events, there can be no doubt that these chapters are destined to maintain, if not increase, the high reputation of the work of Mr. Holmes as a practical and theoretical authority—alike useful in direct application to practice and for reference in more extended scientific study. The essays are, all, sufficiently clear and full in their practical directions and various details, suggested by large hospital experience, to render them invaluable to the young practitioner, at the same time that their marginal references are ample for the purposes of the most exacting scientific reader. The remark of the editor in his preface is a very just one, that "by consulting the chief authors quoted and referred to in each essay, the student will obtain a tolerably complete list of the best monographs on surgical subjects in the English language;" and it is just this completeness of reference, in combination with so much that is practical in character and directly based on personal experience, enlightened by extended learning, which renders these essays, of themselves, a library collection of the highest character, for the purposes intended, and entitles them to take rank along with the first class monographs alluded to, if not to be regarded as actually such themselves. This may seem extravagant praise to be applied to some of the articles in the present volume and in the previous volumes, as it really would be considering the nature of the topics and the intention of the writers in restricting their discussion; but it is reasonably true of other and many papers in the fourth volume, as it is, also, of several in the first, second, and third. Some of these latter have been pointed out in previous notices, and we hope to indicate a few of the former on the present occasion.

It is impossible, however, to give a full account of over one thousand closely printed octavo pages of such matter, in the very superficial and cursory sketch to which we are unavoidably confined. Analysis and discussion are both discouraged by the extent and richness of the field displayed to view. The amount of comparatively new material and the compactness and general brevity, notwithstanding the bulk of the resulting whole, render it difficult to enter into any selections for purposes of comment and quotation.

Diseases of the Organs of Digestion, of the Genito-Urinary System, of the Breast, Thyroid Gland and Skin, and an appendix of miscellaneous subjects, constitute the subjects of the different chapters of the volume before us. In the Appendix are presented Surgical Diseases of Childhood, Surgical Fever, Apnœa, Parasites and the consequent Diseases, Venomous Insects and Reptiles, Surgical Diagnosis and Regional Surgery, Hospitals, Surgical Instruments and Apparatus.

In the first class of disorders—those of the organs of digestion—we have a very interesting and practical sketch of the surgical diseases connected with the teeth by S. James A. Salter, Esq. The first subject treated of, Alveolar Abscess, is so commonly met with in private practice and so frequently injurious in its effects, that the very clear account of it here presented and the excellent advice as to the proper mode of treatment, ought to be read by every practitioner of medicine and surgery, if not by every dentist, in the country. Mr. Salter urges the extraction of the diseased or dead tooth, in all cases, as "*the* cure," and tells us that he knows of but "two circumstances which peremptorily interdict this mode of treatment." These are a strongly hemorrhagic diathesis, and the cases in which the abscess occurs near the upper incisor teeth of young people in whom the jaws have not yet assumed their adult form, and where the permanent dentition is as yet incomplete. He admits that, "in a few exceptional instances," the disease ceases altogether without the removal of the offending tooth; also that it is often undesirable to extract a particular tooth that may be threatening or causing the abscess, and he suggests, in such cases, the usual temporizing remedies; but he fairly tells us that the disease remains in the vast majority of cases in the form of a pus-discharging fistula, and that in the earliest period, "when suppuration is rather impending than established," the malady may be cut short by the extraction of the affected tooth or by the removal of the stopping in a stopped tooth. The period of active inflammation with pain, swelling, and suppuration is, of course, not the time for active interference, except with leeches and the lancet to the gum; but we have seen so much trouble arising from repeated attacks in the same process while the tooth remained, that we have long been in the habit of regarding the dead tooth as a foreign body—"the equivalent of a sequestrum," as Mr. Salter justly names it—and have recommended its extraction, often in opposition to the dentist's advice, so soon as the acute attack had subsided, in the great majority of adult cases.

Of the other disorders noticed, those which most attracted our attention were: 1. Alveolar and maxillary necrosis from phosphorus fumes and from eruptive fevers; and 2. Hemorrhage after extraction. The first of these, maxillary necrosis, has been rare in this country, although the phosphorus variety is likely to increase in prevalence with the recent development of lucifer match manufacturing. Mr. Salter's whole account, although written in the spring of 1862, is well brought up and extremely interesting. He refers to a case in the London Hospital, under the care of Mr. Adams, subsequently reported in the *Medical Times and Gazette*, July 5, 1862, in which the whole of the lower jaw was necrosed and had to be removed, including the condyles. A very similar case has recently been under the care of Dr. Wm. Hunt, in the Pennsylvania Hospital, Philadelphia, and is reported in the present number of this Journal, in which the necrosed lower jaw was removed. The patient is still doing well, the contour of the chin and rest of the external base line of the countenance being wonderfully preserved, so as greatly to lessen the deformity by reducing the enlargement due to the exfoliating mass of necrosed bone, instead of destroying the jaw outline by removing its bony support. This case was exhibited to the College of Physicians of Philadelphia about six weeks after the operation, and then presented a very satisfactory result.

The practical rule is to avoid a too early interference, especially with the lower jaw, where the supplemental bone formation is so essential and of such slow growth. This repair of the lower jaw, however,

> "Is but temporary; for after a time—often a considerable time—the new bone diminishes, by absorption, to a mere narrow arch, and ultimately there is scarcely enough bone to keep out the lower lip and the chin is utterly lost. I have had an opportunity of examining this state of parts after the lower jaw had been removed ten years. How far this loss, by absorption of supplemental bone, may be prevented by supplying it with a function, through the means of artificial teeth, is a question of theoretical interest and of practical importance." p. 47.

In regard to hemorrhage after teeth extraction we can refer only to the author's judicious remarks on the importance of considering the "general and diathetic nature of alveolar hemorrhage in devising its proper treatment." He very wisely objects to operative measures, inasmuch as "anything which would increase the wound or add a fresh one (such as the cautery or the ligature of an arterial trunk) is contraindicated."

In a bleeding socket, the old plan of plugging with lint or lint and turpentine is mentioned as the universal method of local treatment. We have found this to be the most certain, but prefer a paste of persulphate of iron and pulverized alum with water, instead of turpentine, along with the lint, especially if the oozing of blood be not confined to one cavity, as is sometimes the case. Mr. Salter recommends "the rapid and abundant administration of internal astringents" and mentions tannin and turpentine as the most successful. He also suggests the "muriate tincture of iron," but fails to speak of gallic acid, the perchloride and the persulphate of iron, but especially of the importance, in the not unfrequent instances of excessive arterial and cardiac excitement, of moderating this injurious action with digitalis, veratrum viride, or other analogous therapeutic agents. We are convinced that the opinion of some of the best writers, to this effect, as to the employment of digitalis and other arterial sedatives and sedative agencies, is frequently sustained in actual practice.

Excellent and comprehensive though short essays by Dr. A. W. Barclay on the two different but still confounded diseases, Diphtheria and Croup, including incidentally some reference to a near relation of the former of these, Scarlet Fever, occupy the next sixteen pages, and are followed by an extremely interesting and valuable monograph by G. D. Pollock, Esq., on Diseases of the Mouth and Alimentary Canal. There are many remarks of practical importance which might be dwelt upon with advantage in relation to various disorders of the mouth and throat and to tumours of the jaws, but we can refer only to the section on staphyloraphy. This is especially interesting and instructive in its very full and careful discussion of the whole subject of cleft palate (including respectful mention of our countrymen, Mason Warren, Mettauer, Mütter, and Pancoast, along with Roux, Cloquet, Dieffenbach, Avery, and Fergusson) and in the descriptions of the various modes and steps of the operation, as applied to different forms of the infirmity. Diseases of the alimentary canal, by the same able author, follow in a still more valuable series of short articles, which affords an admirable view, particularly rich in illustrative cases, of abdominal abscess, fecal abscess, and the many acute and chronic species of intestinal obstruction, with the operations resorted to for their palliation or removal.

A complete, but comparatively brief summary chapter on Diseases of the Rectum, by H. Smith, Esq., comes next in order. The author manages to tell us in forty-four pages all that it is important to know about these most troublesome disorders, and does so in an abundantly clear and practical manner.

The monographs on Hernia, and on Diseases of the Urinary Organs, by Messrs. John Birkett and Henry Thompson, respectively, are two of the best in the volume, if not in the whole collection. They are remarkable specimens of condensed, yet thorough and exhaustive practical and theoretical contributions on their respective topics, in the light of the latest experience and research, by writers whose reputation is already very high in connection with these especial subjects.

"The whole subject of hernia," as treated by Mr. Birkett, is divided into two parts: the first embracing general considerations in relation to the statistics, pathology, and treatment of the disease; and the second being devoted to an examination of the special regional varieties of hernia, their anatomical characteristics, etiology, diagnosis, and the treatment especially adapted to each kind.

The statistics are entitled to more than usual confidence, as they are derived from the records of the City-of-London Truss Society, reported by Mr. Kingdon, and based upon a gross total of 96,886 applicants for trusses. Mr. Kingdon estimates the proportion of cases, including every variety of hernia, for all ages, between the two sexes, to be two males to one female; this proportion varying considerably, however, at different periods of life, on account of causes connected with certain congenital malformations in the male, which are spoken of in treating of the special forms of hernia. Mr. Kingdon is quoted also for the only trustworthy facts relating to the ages at which hernial protrusions are first developed. In the reports, for 1860 and 1861, of the London Truss Society, 9,296 cases of inguinal and femoral hernia are tabulated, all of which passed under Mr. Kingdon's personal examination; the respective age of each individual at the date of the first hernial protrusion being ascertained, as nearly as possible, by reckoning back to the age at which it was first noticed. Most records, hitherto, have presented only the age of the patients at the date of their application for relief. Under this mode of observation M. Malgaigne has shown that there are fewer cases of hernia before thirty-five years of age than after; which must be an error, on account of the greater liability in early life from congenital defects. Mr. Birkett is induced, by his own observations, as well as by Mr. Kingdon's results, to believe that the majority of cases, taking all varieties in both sexes, are developed before thirty-five years of age. Out of Mr. Kingdon's 9,296 cases 5,659, or 60.8 per cent., had commenced before thirty-five years of age; and 3,637, or 39.2 per cent., after that age.

The question of hereditary predisposition, also, has been carefully investigated by Mr. Kingdon. Both sexes seem to be influenced alike, the proportion of the whole being about 34 per cent. Infants under one year are most frequently the subjects of the hereditary predisposition from both parents, the proportion to the whole number of cases within twelve months after birth being about twelve per cent. This fact points "to two very important causes which give rise to hernial protrusion at this early age: first, to the arrested efforts of nature in closing the ventral orifice of the vaginal process of the peritoneum and the obliteration of that sheath; and, secondly, to an abnormal elongation of the mesentery"—two structural conditions which belong to a class of anomalies very likely to be determined by hereditary influences. These conditions have been very closely studied by Mr. Birkett, and are fully discussed in connection with the pathology and treatment, particularly of certain varieties of hernia. Still more recently he has made the varieties of inguinal hernia dependent on abnormal conditions of the vaginal process of the peritoneum the subject of a very practical contribution to the *Guy's Hospital Reports* for 1864.

The enlightened practical character of Mr. Birkett's views is well shown in the manner in which he enforces the paramount importance, in many points of view, and especially in the surgical treatment of hernia, of a full appreciation of the physiological differences between the "congenital hernial sac," which is the unclosed or patulent vaginal process of the peritoneum, and what he calls the "acquired hernial sac," which is an elongation of the parietal peritoneum, resulting from a slow, gradual process of relaxation, under the pressure of the contained viscera and ultimate hernial contents.

The use of a truss, for instance, and the amount of benefit to be derived from it must depend, in a great degree, upon the kind of sac concerned. In the one case, of congenital predisposition, a resort to the "palliative measures"—to a proper truss in short—at once upon the discovery of a hernial descent into the patulent vaginal process or of a tendency to this descent, the progress of the hernia may be arrested and the tendency, in not a few instances, entirely removed by the ultimate obliteration of the congenital canal. In the slowly-forming hernial sac, on the other hand, the truss must be employed to prevent development of the sac by mechanical support, if the hernia is sufficiently recent; or, in case of the formation of the sac, as in most instances when the surgeon is first consulted, it can be used only to retard the further dilatation and obviate the danger of strangulation by preventing the "descent of the rupture." "Whether the hernia occurs in infancy, youth, at middle age, or at later periods of life," says our author in urging the necessity for *skilled* mechanical treatment of every variety of hernia, "if properly watched and judiciously supported, it usually gives but little trouble; in many cases it is even cured. But, on the contrary, if it be neglected, increase in bulk, and, sooner or later, diseased states of the rupture, often leading to the death of the individual, will almost infallibly occur." This doctrine would seem, to most hospital surgeons, to be too well established and generally admitted to be worth repeating here; and yet how many regular practitioners are perfectly willing to leave these cases to the mercenary ignorance and pretentious interference of mere mechanics and bandage vendors! How many enterprising operators, on the other hand, are indisposed to believe in the possibility of curing any form of hernia with the aid of trusses only, and are ready to insist upon the "so-called radical cure" as the proper remedy!

We are glad to be confirmed in an already well-settled conviction as to the uncertainty and consequent objectionable character of the operation for the invagination of the hernial sac, which has been so frequently performed, of late years, in various modes, under the lead of Gerdy, Wutzer, and others. The statistical records are still very incomplete, but there can be no question, not only that many failures have taken place, but that many of these unsuccessful cases had been previously reported as cures. There is no doubt, either, of the danger of the operation, although that has probably been overrated. Unless, therefore, after having recovered from the injurious effects of the operation, the patient is enabled to do without a truss, by a permanent closure of the hernial sac, including its ventral orifice, and a general strengthening of the weak parts of the abdominal walls, together with an improved tone of the peritoneal ligaments of the viscera—all of which are necessary to maintain the formerly protruding bowels in their normal situation—the "radical cure" practice is, to use our author's language, "surely scarcely justifiable." This is the old rule of Mr. Lawrence, quoted by our author at the conclusion of his own remarks, and has not yet been overturned by the experience of recent operators.

We cannot give the details of Mr. Birkett's facts, derived especially from the observations of Mr. Kingdon in London, and of Dr. O. Weber of Bonn, who was formerly clinical assistant to Prof. Wutzer, and shall only add a remark in regard to the principle which should govern the selection of cases for the performance of all operations for the radical cure. Mr. Birkett reminds us that the unclosed vaginal process may become obliterated, even after a hernia has passed into it in early infancy, but that there is no evidence that the same obliteration may ever occur to an acquired hernial sac, except perhaps in the rare instance of a plug of adherent omentum. Hence he enunciates the rule that the proper cases for the invaginating method are those only "in which the protruded viscus has descended into a patent vaginal process of the peritoneum, and that all other kinds should be rejected as unsuitable; and that the more efficiently the proposed methods accomplish the ends effected by the processes of nature, the more worthy of confidence they become." (p. 245.)

We should be glad to devote some space to other portions of this most interesting paper, especially to the various practical points in the history and treatment of strangulation, the description of the different varieties of hernia, and the excellent tabular arrangements of the diagnostic signs; but the numerous essays still to be glanced at in the remaining seven hundred pages of the volume demand a more restricted survey than we have thus far been tempted to indulge in.

Having this idea in view we shall confine ourselves to a single quotation from the essay of Mr. H. Thompson, on the Surgery of the Urinary Organs, although pages might readily be filled with useful comments on this and the subsequent papers. The readers of this journal may, or ought to, be already familiar with many of the views of this able and most judicious writer and practitioner, through the notices of his various works which have been presented already in our pages; so that there is less reason for dwelling on them here. There are, however, some general remarks which are so eminently sound and forcible that we quote them for the especial benefit of specialists and other practitioners, whose dog-in-the-manger tendency it is to limit their practical resources, by narrowing their own view, while they would endeavour to supersede their professional neighbours in the vain pretence of devotion to a single class of diseases, and hence of superior knowledge and skill as the result of such devotion.

In introducing the subject of Diseases of the Urinary Organs he tells us that:—

"Few things conduce more to error in estimating symptoms than a too exclusive specialism in the observation of disease. The study of stricture and of other forms of urethral obstruction, of vesical diseases, of calculous formations, and of those chronic changes in the secreting structure of the kidney, which are conventionally assigned to the province of the physician, must be pursued together if the surgeon is properly to appreciate the import of any one of these affections."

Insisting on the necessity for the surgeon to be personally cognizant of the condition of the kidneys, through a direct examination of the chemical and microscopical characters of the urine of his patient, before undertaking any important operation on the bladder or urethra, and this without the intervention of a physician or any other observer than himself, he continues:—

"Not only is the knowledge easy to attain and convenient to possess, but it may be safely held that the surgeon who views with equal intelligence the lesions, both functional and organic, which affect the kidneys, the bladder and the urethra, will be, *cœteris paribus*, the safest and most successful adviser in the ailments of any one of these viscera."

He further says:—

"I do not hesitate to affirm that no man can deal adequately and safely with cases of impaired urinary function, whose hand is not well trained to the use of the sound or catheter, whose eye is not familiar with urinary deposits in all their varieties of crystals, corpuscles, and renal casts, and who is not acquainted with their indications, so far as these are known, as well as with the significance of those subjective phenomena which are found accompanying them. The exploring sound is quite as essential to the diagnosis of urinary disease as the stethoscope is to affections of the chest. He who is a physician only will (and does) constantly overlook calculus and stricture to the great detriment of the patient; while the mere surgical handicraftsman will (and does) treat mechanically many a case which can only be injured by his manipulations. With these views, the careful study of all acute and chronic renal affections is recommended to the student who desires to qualify himself specially for the practice of surgery." pp. 327, 328.

These are the sentiments long ago expressed, with equal clearness and force, in his admirable prize essay on Stricture of the Urethra, by Mr. Thompson; they are equally appropriate and useful in their new position, and we gladly welcome them again.

Next in order are presented short but very complete papers On Urinary Calculi and Lithotomy, by A. Poland, Esq.; Lithotrity, by Charles Hawkins, Esq.; Surgical Diseases of Women, by J. Hutchinson, Esq.; Diseases of the Male Organs of Generation, by G. M. Humphrey, M D.; Gonorrhœa, by H. Lee, Esq., and J. A. Marston, Esq., M. D.; Diseases of the Breast, by J. Birkett, Esq.; Diseases of the Thyroid Gland, by Holmes Coote, Esq.; and finally, Diseases of the Skin, in two parts, the first one on General or

Constitutional Affections, by Dr. Jenner and Dr. Hillier, and the second on Local or Surgical Affections of the Skin and its Appendages, by T. Smith, Esq.

Then we have the Appendix, on certain miscellaneous subjects which may be enumerated in their own order of succession. Surgical Diseases of Childhood, by T. Holmes, Esq., including Congenital Dislocation and Intra-Uterine Fracture, by B. Brodhurst, Esq., and Lateral Distortion of the Spine, by A. Shaw, Esq., come first; and are followed by papers On Surgical Fever, by J. Croft, Esq.; Apnœa, by G. Harley, Esq.; On Parasites, and the Diseases which they Produce, by G. Busk, Esq.; Venomous Insects and Reptiles, by G. Busk, Esq.; Surgical Diagnosis and Regional Surgery, by T. Holmes, Esq.; On Hospitals, by Sir J. Ranald Martin; and lastly, On Surgical Instruments and Apparatus, by Holmes Coote, Esq., and J. C. Wordsworth, Esq.

The foregoing list will serve at least to give an idea of the numerous and even unusual subjects treated, and of the very wide range of topics embraced within the plan of the work, in accordance with the promise of the accomplished editor.

We have no complaint to utter against either the matter or manner of these individual papers, and only regret our inability to present the detailed and particular notice of each one which a careful examination has shown them to be fully entitled to; at the same time that such a *résumé* of their leading points would be practically useful, could it be brought within reasonable bounds.

Several of the essays in the previous volumes have struck us as well worth a separate publication, and two or three of them have been reprinted in this manner. Indeed, one of these, Longmore's paper on gunshot wounds, has been reprinted in this country, and republished in a second edition in London. The same desire has suggested itself in regard to certain essays of the fourth volume. A number of them are summaries or compends, somewhat in advance, perhaps, but otherwise not very different from larger works, by the same authors, already well known. A few, however, are really new, or so compact, well arranged and practically useful, that we should be glad to see them circulating far more widely, especially in this country, than is practicable in their present form; such, for instance, as the paper on hernia, and those on surgical diagnosis and regional surgery and on hospitals, and that on apnœa. We do not, by this selection, wish to exclude others from a similar prominence, for there are several which appear to us to deserve a separate publication; but the papers particularly mentioned are suggested as being likely, on account of their character and topics, to be most generally sought after and most generally useful.

The study of hospital construction and management, whether for civil or military purposes, is by no means a novel one, in this country, as the recent excellent work on Military Hygiene of Dr. Hammond, as well as other minor publications, would amply serve to show. Nor are we ignorant of much that has emanated from recent writers on the subject—and, above all, from the enlightened and prolific pen of that wonderful instructress of the ablest men of her day, including the "confidential" blue book records of her testimony before the British Government Commission; still, we have found Sir J. Ranald Martin's tract on hospitals so full of the results of the general British and Continental experience and research, as well as of the precepts of Miss Nightingale—all so thoroughly condensed and clearly arranged, that we do not hesitate to urge its republication as an act of humanity alone; and we sincerely hope that the Sanitary Commission may add one more claim to the gratitude of the country by presenting us with an American edition, with such notes and comments as the vast home experience and study of the past four years may suggest. Such a combination could not fail to prove as welcome a gift in return to the able author, and his still more distinguished monitress, as his and her works have been to us.

E. H.

ART. XIX.—*Lectures on the Diseases of the Stomach, with an Introduction on its Anatomy and Physiology.* By WILLIAM BRINTON, M. D., F. R. S., Physician of St. Thomas's Hospital. Second Edition. 8vo. pp. 368. London, 1864.

THE diseases of the stomach are among the most frequent for which the physician is called upon to prescribe, while they are among the most obscure in their symptomatology and difficult in their diagnosis. Consequently no class of diseases, probably, has been heretofore to a greater extent mismanaged. A very cursory examination of the treatment laid down as that proper in gastric affections generally, by our leading medical authorities of even a recent date, will show how much it partakes of empiricism, to how little an extent, at least, it is founded upon correct views of the physiology of the stomach, or of the nature of its several pathological conditions; how little it is sanctioned by the general results of clinical observation. Every attempt, therefore, made in the right direction, to remove, even in part, the obscurity and uncertainty in which the etiology, symptomatology, and pathology generally, of the diseases of the stomach have been involved, and to render more clear and positive their remedial and hygienic treatment, claims our most earnest attention.

Such an attempt has been made by Dr. Brinton in the lectures before us; and we think that he has to a very great extent succeeded in its accomplishment. He has availed himself of whatever facts bearing upon the subject are to be found in the records of the medical experience of different epochs and countries; these he has carefully compared with each other and with his own observations made during twelve years as a dispensary and hospital physician, in order to test, as far as possible, their accuracy and true bearing.

The results of his investigations and personal experience were embodied by Dr. Brinton in a course of lectures delivered by him to a class composed of the more advanced students of St. Thomas's Hospital, London. These lectures, with many additions and amendments, are those embraced in the volume before us. Among the additions is an introductory section presenting a summary of the anatomy of the stomach, and of all that is at present known in respect to its physiology. We would call particular attention to this portion of the work as one of peculiar excellence and accuracy.

The first of the eight lectures of which the volume is composed is devoted to a general consideration of the leading symptoms of stomachic disease—pain, eructation, regurgitation, vomiting, hemorrhage, and flatulence. The characteristics of each of these symptoms, together with its greater or less prominence under particular circumstances, its significance, its value as a pathognomonic sign, and its mode of production, are carefully examined.

The author's commentary upon them respectively is particularly clear and instructive.

Some degree of pain is a common symptom of gastric disease. In numerous cases although originating in the stomach it is referred to distant parts, but in the large proportion of cases, the pain is referred to the stomach itself, and located with sufficient accuracy to render its precise position a matter deserving of notice. It is scarcely possible, however, for the patient to indicate in any case the depth to which his sensation of pain is to be referred.

A very potent cause of deception in the case of pain ascribed by the patient to the epigastrium, is the fact that this spot is "a kind of focus, formed by the convergence and attachment of a number of important organs, and hence liable to be occupied by the pain which the lesion of any one of them can produce."

> "Pericarditis, pleurisy, gallstones, hepatic abscess, diaphragmatic lesions, emphysema of the lungs, and a variety of intestinal causes (among which Dr. B. has himself verified an obstruction of the small intestine occupying the right iliac fossa), any one of these can produce what is, strictly speaking, pain in the epigastrium, and therefore so far simulative of gastric pain. And though it is probable that the contrast of the latter with any one of the former would show a considerable difference—so much so that few persons unfortunate enough to have experienced the two would be incapable of distinguishing them—yet ordinary language affords little means of expressing the difference thus felt, to say nothing of the rarity of an opportunity for such a direct comparison."

As a general rule, pain in gastric disease is a grave symptom in proportion as well to its severity as to its concentration and fixedness. That is to say, a severe and continuous pain, confined to one spot of small extent, is a more serious indication than a pain at times of equal or nearly equal severity, which fluctuates in its different attacks, ranging the epigastrium of which it always occupies a wide area. Pain is graver, and more certainly gastric, in or near the median line. Dr. Brinton believes that a pain thus located always indicates a more serious derangement of the innervation of the stomach than when it has a less exact correspondence with the solar plexus. The location of the most serious form of gastric pain is on the dorsal median line ranging from between the scapula to the lumbar region (*rachialgia*). It is usually an addition and complication to a previous gastric pain. It is rarely associated with any but the severest forms of dyspepsia, and belongs chiefly to deep ulceration, or cancerous lesions of the stomach, involving all its coats.

Severe or continuous pain of the stomach is most commonly associated with more or less soreness or tenderness upon pressure. When the pain, however, occurs suddenly and is temporary and attended with much flatulence it is often relieved by gentle pressure. According as the tenderness upon pressure is moderate or excessive, superficial or deep-seated, localized or diffused, will it confirm our judgment as to the nature and seat of the gastric malady—distinguishing general inflammation from ulceration or dyspepsia, or a lesion of the peritoneal from one of the mucous coat.

Some interesting remarks are presented on the physiology of eructation, regurgitation, and vomiting. All three of these acts, whatever their differences of detail, agree in requiring for their occurrence an open cardia, a closed pylorus, and a compressed stomach—the compression resulting either from its own muscular contractions or from extrinsic force.

In alluding to *vomiting* as a symptom of gastric disease, Dr. B. remarks that it is sometimes the case that the vital powers become rapidly exhausted by violent and frequent vomiting, to arrest which all our efforts fail, while we are entirely uncertain as to the cause of the vomiting during the life of the patient, and are unable to derive any light upon the subject by a necropsy, there being no apparent lesion of the stomach after death, or even, it is said, of any other organ. Hence it is not possible to augur the gastric origin of vomiting from its mere severity and frequency, nor must we expect to decide this from any single peculiarity of the symptom—such as its excitement by food, its association with epigastric pain, or even its expelling blood.

"One general rule respecting it may, however, be laid down. While it is to the aggregate of symptoms that we have to look for our diagnosis of the cause of vomiting in any given case, it may," Dr. B. thinks, "be propounded that the facility with which an irritation produces vomiting varies, other things being equal, with the closeness of alliance between the stomach and the irritated part. For example, vomiting is excited more frequently and readily by an irritation of the duodenum or pharynx, than by an irritation of the jejunum or mouth respectively; and, again, by irritation of the small intestines rather than of the large; of the mucous rather than of the peritoneal coat, throughout the whole canal; of the brain rather than of the integuments. Conversely, as may be noticed in pleurisy, pericarditis, aneurisms, and various endocardial lesions, vomiting is a grave symptom in many thoracic diseases, because, still *cæteris paribus* only, it implies a more serious mischief than would suffice to produce it in lesions of the abdominal cavity."

Dr. B. believes that, in the present state of our knowledge, we are permitted to suppose that whatever the kind of cerebral disturbance necessary for the production of vomiting, a certain degree of irritation of afferent branches of the sympathetic system will generally suffice to excite it, and with a facility apparently proportioned in great measure to the closeness with which these branches are related to that great pre-vertebral centre of the abdominal sympathetic, formed by the semilunar ganglia and the solar plexus.

"Among the vomitings produced by gastric derangements, we may distinguish the following varieties. First, the vomiting brought about by sheer destruction of tissue, involving an abnormal irritation of the nerves laid bare at the seat of lesion; a variety exemplified in simple and malignant ulceration, in wounds of the stomach, in corrosive poisoning, and characterized, as might be expected, by a remarkable amenability to the physical or chemical properties of substances brought into contact with the injured nerves—as in the ingestion of food. Second, the vomiting of obstruction, which is referable, not so much to the mere obstruction, as to the distension and violent muscular movement which is gradually brought about behind the occluded part, and which varies, therefore, not only with the strictness of the occlusion, but with its proximity to the pylorus, its superficial extent, its disposition relatively to the muscular coat, and other circumstances of this kind. This variety of vomiting is often seen in cancer, and, a still better example, in cicatrized ulcer of the stomach. Third, a kind of vomiting in which the gastric distension present appears mainly referable to a loss of contractile power by the muscular coat of the stomach—the structure of the organ remaining unchanged—and in which we must often doubt whether this failure of contractility is not caused by some nervous lesion, itself answerable for the vomiting—whether, in short, the distension of the stomach is simply concurrent, or really causative in this process."

Hemorrhage is an occasional attendant upon the diseases of the stomach. It may be present and yet no blood detected in the matters vomited. Blood effused in the stomach may be passed off entirely in the feces. Taking this in connection with the fact that it is very rarely vomited so completely and instantaneously as to prevent any portion from passing into the intestine, it must be obvious that the discharge of blood by stool is by far the most frequent symptom of gastric hemorrhage. A mere hemorrhage into the intestines by no means, however, proves that the stomach is the seat of the effusion or any lesion of it its cause. Any injury which can produce a hemorrhage into either of the cavities which communicate with the digestive tube, may indirectly give rise to the influx of blood into the stomach and bowels, and, consequently, to its expulsion thence. Nor is actual gastric hemorrhage always dependent upon disease, properly speaking, of the stomach. Any mechanical obstruction of the portal system—as cirrhosis of the liver, tumours or deposits in the course of the portal vein—may cause so great a distension of the vessels in the walls of the stomach and intestines from which it originates, as finally to cause more or less of their contents to extravasate, giving rise to a vomiting or discharge per anum of blood, which is really unconnected with any actual disease of the stomach, however it may embarrass or even suspend its functions.

Hemorrhage of the stomach often takes place under circumstances which imply little danger to life, sometimes even little derangement of health. It may be frequent and yet very small in amount, and it may be recovered from, without leaving any lesion from which the most careful necropsy can determine its site.

However suspicious a circumstance is the appearance of a small quantity of blood in the matters ejected from the stomach, it is only by its careful collation with other symptoms that it can influence materially the diagnosis. It proves a solution of continuity in the vessels yielding it, but does not determine the situation of the ruptured vessels, nor whether their rupture is due to vascular obstruction, to congestion, to desquamation, or to ulceration.

More copious gastric hemorrhage is a graver symptom and one of more definite import. It sometimes indicates very clearly by the appearance of the blood discharged its arterial or venous origin. By the clots it often contains we infer that it must have been effused rapidly, from one or two large, or from numerous small vessels. When of a very dark colour and tarry consistence, it proves that it has been exposed for some time to the action of the digestive juices, and, also, that it has either been slowly effused, or is of but moderate amount.

> "In blood discharged from the stomach by the bowels, of course no such rule will obtain, indeed such a hemorrhage will rarely fail to exhibit somewhat of this tarry colour and consistence, unless its quantity has been excessive, or its transit through the intestinal canal unusually rapid. The detection of hemorrhage is sometimes rendered difficult by the admixture of blood with other substances of similar appearance, especially with various articles of food, and with more or less altered bile, occasionally even with morbid products. A careful examination will, however, generally clear up any obscurity of this kind. Indeed a mere dilution of the inspected matter with water usually suffices; or, if not, a microscopic examination rarely fails to decide the question."

Flatulence is among the most common of the symptoms connected with stomachic disease. We are to recollect, to use the language of Dr. B.,

> "That the stomach and intestines generally contain a certain amount of aeriform fluids, derived, in great part, from the decomposition of ingesta. That it is only when they are excessive and troublesome that their presence is strictly abnormal. And that, among the causes of such an abnormal amount of these gases—in one word of flatulence—the most intimate and obvious are (1st) a quantity of food which is too large, either absolutely or relatively to the digestive juices of the individual; and (2d), a quality of food which—either from exist-

ing or nascent putrefaction, or from a peculiar proneness to it, or even from a peculiar composition, favours this change."

There are, however, as Dr. B. justly remarks, various abnormal states of the digestive canal in which flatulence occurs under circumstances inexplicable by the above laws. Occasionally the symptom appears and disappears with such rapidity, apparently so entirely independent of every other abnormal condition, that it is no wonder the supposition of a secretion of gas by the stomach should be considered necessary to an explanation of the phenomenon.

A person breaks a fast of some hours with a morsel of food which he habitually digests with difficulty. He is instantly seized with acute pain of the epigastrium, which in a short period as suddenly disappears after a copious eructation of flatus. In explanation of this fact Dr. B. remarks that, within certain limits, dictated chiefly by the general pressure of the atmosphere, the intestinal gases are exposed to two kinds of compression, which not merely affect the bulk occupied by a given amount of flatus, but concur, probably, often with a slower alteration in the quantity developed in the digestive canal.

It is by the pressure, therefore, of the abdominal muscles on the alimentary canal, and that of the muscular coat of the latter on its contents, that to a great extent is regulated the bulk of the aeriform fluids by which the digestive canal is so largely occupied. It is, according to Dr. B., chiefly to a sudden decrease of pressure that the apparently sudden development of gas in the stomach and bowels is to be referred; and this decrease of pressure he attributes mainly to muscular relaxation in answer to a stimulus.

It is well known that when the peritoneal coat is irritated in the intestine of a living animal, a local relaxation is induced, causing a kind of bulging of the walls of the bowel occupied by gas. From a variety of morbid conditions of the alimentary canal, it is shown that such relaxation is connected rather with irritation of the peritoneal than of the mucous coat; of the trunks rather than of the periphery of nerves, while its degree and extent vary (*cæteris paribus*) with that of the irritation. Thus, in its more characteristic forms, as in severe peritonitis, for example, it engages not only the muscular wall of the intestine, but also those muscles of the abdomen co-ordinate with those of the intestines, giving rise then to that general gaseous distension of the abdomen observed in certain forms of tympanitis. Dr. B. would, therefore, explain the sudden attack of flatulent colic already referred to, not by a sudden secretion of gas, but by supposing—

> "That the irritation of the morsel of unwholesome food caused a relaxation of the gastric coats, that the pylorus—generally patulous to the non-alimentary contents of the duodenum, and specially so in virtue now of its relaxation, allowed the rarefied gases of the stomach to be increased by an addition from the duodenum, and that the resulting eructation expelled a fraction of the total gaseous mass. That under these circumstances, expulsive contraction should follow relaxation is not surprising; in the normal rhythmic peristalsis of the muscular wall of this canal, these two states have exactly the same sequence, both in time and place.
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> "Without going so far as to assert that distension does not often materially add to the pain of a flatulent attack, we are at least fully entitled to conclude," says Dr. B., "that, far from pain being always preceded and caused by flatulence—in this chain of abnormal phenomena, pain, relaxation, and contraction or expulsion are generally three successive links; and that not only may the first occur without always or necessarily calling forth the second and third, but that it is essentially the exponent of an irritation itself the cause of all three."

The second lecture is on the morbid appearances discovered after death in the stomachs of those who, during life, had exhibited symptoms of gastric disease. It is full of instruction. The true character of the several abnormal conditions of the stomach observed in necropsy is clearly described, their significance carefully examined, and their relative importance most ably indicated. The latter half of this same lecture is devoted to a consideration of the pathology and treatment of gastritis, and to a notice of catarrh of the stomach, hemorrhagic erosion, and follicular erosion, three affections which, in respect of their nature, symptoms, and appearances after death, must, Dr. B. thinks, be regarded rather as varieties of subacute gastritis than as specific or independent diseases. It would extend our notice of the work to an unreasonable length were we to enter upon an analysis of the lecture. No mere outline of it would do entire justice to the author or be very edifying to our readers.

The third lecture is on ulcer of the stomach. This condition of disease is among the most important and interesting of those to which the stomach is liable, whether we consider its frequency, its usually protracted course, the suddenness with which it may, at any stage, prove fatal, notwithstanding that it is usually curable. It is important, also, from the fact that in practice it will often be found that the diagnosis of cancer, dyspepsia, or chronic inflammation requires a process of induction which generally amounts to, and sometimes specifically includes, a reviewal of the phenomena of ulcer of the stomach before rejecting this as the explanation of the symptoms present. The disease becomes of still greater interest under the view entertained of it by Dr. B., that it is the result of a specific structural lesion, as can, he thinks, be at once detected by an examination after death.

The entire subject of ulcer of the stomach is treated by Dr. B. with great ability. His history of symptoms is derived almost exclusively from the records of about 1200 cases, affording often only a mere outline of the chief symptoms, but always verified by careful necropsy, together with the personal study of more than 200 cases, affording minute details respecting symptoms, but only verified by necropsy in a small proportion of them.

A very instructive lecture follows on cancer of the stomach. The author offers some new details bearing on the diagnosis and treatment of the disease, and claims for his description an accuracy scarcely hitherto attainable.

The foregoing lectures (3d and 4th) occupy alone nearly one-half of the volume, a space fully warranted by the importance of the maladies of which they treat.

Lecture 5th treats of cirrhotic inflammation, or, as Dr. B. styles it, *plastic linitis*, of the stomach, suppurative linitis, tumours, hypertrophy, atrophy, dilatation from obstruction, destruction, injury, or paralysis, and secondary inflammation. These affections, Dr. B. believes, even the rarest of them, are not the mere extremes or modifications of a variety of diseases, but constitute types and classes for themselves. They are not only obscure considered in themselves, and, consequently, little likely to reveal themselves to the casual or one-sided glimpses which their infrequency has caused to be bestowed upon them, but they are still more obscured by the names and descriptions they have hitherto received. The account given of them by Dr. B. is particularly clear and instructive, and, as he assures us, is founded on careful clinical and pathological observations conducted by himself.

A most admirable view of "dyspepsia" is given in Lecture 6. Dr. B. sets out with the inquiry as to what is meant by the term dyspepsia.

There is no doubt that in popular acceptation the term dyspepsia is applied to a disturbance or difficulty of digestion, unexplained by structural lesion ; even taken in this restricted sense the question naturally suggests itself, "How far is dyspepsia a *gastric disease?*"

"It may be quite true," says Dr. B., "that in some cases the stomach is only distressed by the excessive amount of food introduced into it, and is only injured by being overtasked, much as a muscle or a tendon might be. It may be equally true that, in others, it is weakened by want of exercise, or deranged by a surplus of the materials amenable to other parts of the digestive process; that it languishes for want of the protein compounds it ought to elaborate; or is surcharged by starchy or fatty matter foreign to its office—perhaps often in excess of what can be assimilated by the organs whose function it is to do so. Still, since, in a vast majority of cases, the symptoms of dyspepsia are referable mainly to the stomach—since the organ is either primarily or secondarily deranged, and the symptoms of that derangement are the chief phenomena observed by the physician and felt by the patient—we may safely accept the ordinary view that dyspepsia generally represents a functional malady of the stomach. Doubtless there are many derangements of other parts of the alimentary canal equally entitled to the name of indigestion. But with the exception of intestinal dyspepsias attended by diarrhœa—and often accompanied by such a catarrhal state of the large intestine as amounts to a structural lesion—the symptoms strictly intestinal are generally scanty and obscure in comparison with those traceable to the stomach. And hence these latter may justifiably be the chief objects of our study. Even were they mere incidents of the malady, so long as we remembered that they were not its essential or sole features, but only those most accessible to our scrutiny, we should be entitled to accord them a notice proportionate with their importance. But when we find, as we do, that the stomach not only always shares, and sometimes almost monopolizes, the derangements called dyspepsia, but that it is also more amenable to treatment than any other part of the digestive canal, we are justified in describing dyspepsia as being, for practical purposes, a gastric disease."

Athough Dr. B. disclaims any attempt at a full account of dyspepsia, and professes only to submit, for the consideration of his readers, some suggestions intended to aid in the rational study of the malady, with the view to the settlement of the true principles of its pathology and treatment, yet the entire lecture on dyspepsia presents a closer and better account of indigestion than can be met with elsewhere. Instead of the loose manner in which the term dyspepsia has been too often employed, to designate almost all diseases of which chronic disturbance of the digestive function constitutes a prominent symptom, Dr. B. has endeavoured to restrict the term to a disturbed or difficult state of digestion without any structural lesion of the stomach or any prominent primary affection, whether acute or chronic, of the system at large, or of the heart, the lungs, the brain, etc. With this acceptation of the term dyspepsia, he has described, with great accuracy, though in brief outline, the phenomena by which it is indicated in the several forms under which the disease is met with, and the treatment—chiefly hygienic—by which it is to be most successfully combated.

Of the correctness of the manner in which the subject of dyspepsia is discussed in the lecture before us and of the justness of the conclusions to which Dr. B. has arrived in reference to it, there can scarcely be a doubt. His views in relation to its pathology are unquestionably those alone upon which any successful plan for its prevention or cure can be based—without the necessity of taking into account, at the same time, sundry maladies of the human organism, general or local, of which suspended, impeded, or disturbed digestion forms almost always a prominent symptom.

We believe that from a careful study of the lecture all will rise with instruction—with clearer, more definite, and practical views of a malady "the minor degrees of which are so common, that few persons in civilized life altogether escape them;" one which, although, even in its more aggravated forms, is in a great measure without very serious results, nevertheless inflicts upon those who are its subjects an amount of suffering and discomfort from which they would fain be relieved.

The subjects of the remaining two lectures are, respectively, gastric phthisis and gout of the stomach. Both these affections are treated by Dr. B. with the same judgment, care, and clearness he has exhibited in reference to those which constitute the subjects of the lectures that precede. The symptoms appertaining to each are carefully analyzed, and their true bearing fully discussed; the relationship of the lesions to which they respectively appertain to those present in the other diseases of the stomach are inquired into, with the view of determining the true character of these affections, whether they are to be ranked as independent maladies, or are simply modifications of one or other of those previously described, in consequence of their occurrence in patients affected with, or strongly predisposed to, tuberculosis or gout.

The entire series of lectures embraced in the volume before us are well worthy of a close study on the part of every one desirous of acquiring correct views in relation to the nature and treatment of the diseases of the stomach. Nowhere can be found a more full, accurate, plain, and instructive history of these diseases, or more rational views respecting their pathology and therapeutics. D. F. C.

BIBLIOGRAPHICAL NOTICES.

ART. XX.—*Reports of American Hospitals for the Insane.*

1. *Of the Maine Hospital, for the fiscal year* 1863–64.
2. *Of the New Hampshire Asylum, for the fiscal year* 1863–64.
3. *Of the Vermont Asylum, for the fiscal year* 1863–64.
4. *Of the Massachusetts State Hospital, at Worcester, for the year* 1861.
5. *Of the Bloomingdale Asylum, for the year* 1863.
6. *Of the New York City Asylum, for the year* 1863.
7. *Of the New York Asylum for Insane Convicts, for the fiscal years* 1859–60, 1860–61, 1861–62, *and* 1862–63.
8. *Of the Maryland Hospital, for the years* 1860, 1861, 1862, *and* 1863.
9. *Of the Longview Asylum, Ohio, for the fiscal year* 1861–62.
10. *Of the Asylum of California, for the fiscal year* 1860–61.

1. THE crowded condition of the *Maine Insane Hospital* induces its superintendent once more to encourage the erection of an additional wing to the building.

	Men.	Women.	Total.
Patients in hospital, November 30, 1863 .	128	137	265
Admitted in course of the year	80	44	124
Whole number	208	181	389
Discharged, including deaths	80	55	135
Remaining, November 30, 1864 . . .	128	126	254
Of the discharged, there were cured . .	33	16	49
Died	30	23	53

Causes of Death.—"Consumption, 13; dysentery, 8; typhus fever, 5; exhaustive mania, 5; inflammatory sore throat, 4; epilepsy, 3; general paralysis, 3; chronic diarrhœa, 2; dropsy, 2; congestion of the lungs, 1; marasmus, 1; old age, 1; inflammation of the bowels, 1; chronic mania, 1; congestion of the brain, 1; suicide, 1."

"In the month of April," says Dr. Harlow, "a new form of disease made its appearance in one of the female wards, marked in the onset by a sense of lassitude, severe chills, cold extremities, pains in the head and back, nausea, and vomiting; then followed symptoms of inflammation of the spinal marrow or its membranes, congestion of the brain, paralysis, &c.

"On the second day of the attack, rose-coloured spots usually appeared on the face, neck, and chest. The disease ran its course in from twelve hours to ten days. There were some fifteen cases, including patients and assistants, five of which proved fatal, the others recovered. Our treatment consisted in the use of cathartics in the first stage of the disease, followed with diuretics, sudorifics, tonics, and stimulants.

"In the month of August, more extra sickness of a dysenteric type made its appearance. It continued through September and October, and carried off many of our aged and infirm patients, who had resided in the hospital from one to eighteen years."

Of all the reports which have come under our observation, and in which the admission of insane convicts into the ordinary hospitals has been mentioned, this is the first which does not oppose such admission.

2. The report of the *New Hampshire Asylum for the Insane*, for the fiscal year terminating with the close of April, 1864, contains the following general statistics:—

	Men.	Women.	Total.
Patients in hospital, May 1, 1863	94	110	204
Admitted in course of the year	56	49	105
Whole number	150	159	309
Discharged, including deaths	47	45	92
Remaining, May 1, 1864	103	114	217
Of the discharged, there were cured			36
Died	9	14	23

Died of paralysis, 5; "old age and disease," 4; consumption, 3; exhaustion, 3; epilepsy, general paralysis, dropsy, lodgment of food in œsophagus, typhoid fever, pneumonia, diphtheria, and acute pericarditis, 1 each.

A few cases of typhoid fever, generally of a mild type, occurred among the inmates in the course of the autumn. In one case it was fatal.

A considerable part of that portion of the report which relates to the patients is occupied by an argument to show the importance of a removal of insane persons to a hospital before the disease has assumed its chronic form.

The heating apparatus of the hospital is in process of renewal, and the library was enlarged by the purchase of 150 volumes in the course of the year.

In view of the value, as restorative means, of books and other sources of entertainment, Dr. Bancroft proposes to raise a permanent fund, the proceeds of which shall be devoted to the enlargement of this department of the establishment.

3. As appears by the report of the *Vermont Asylum for the Insane*, for the official year 1863–64, that part of the hospital edifice which had been consumed by fire has been fully rebuilt.

	Men.	Women.	Total.
Patients in hospital, August 1, 1863	208	234	442
Admitted in course of the year	64	64	128
Whole number	272	298	570
Discharged, including deaths	54	58	112
Remaining, August 1, 1864	218	240	458
Of those discharged, there were cured			52
Died			39

"All recent cases," says Dr. Rockwell, "should be placed in an institution of this kind before those organic changes have taken place in the brain and nervous system which render recovery hopeless. But the friends of the patient, or their physician, should carefully discriminate between insanity and the delirium of fever. Occasionally we have one of the latter brought to us in such a diseased and feeble state, that the death of the patient is accelerated by the removal to the asylum."

In regard to the treatment of the insane, he says: "One of the most important objects is to create in them the feelings of self-respect, and the most effectual way of accomplishing this is to treat them with all kindness, respect, and attention. By so doing, they will exercise all the self-control of which they are capable, and endeavour to deserve all the confidence they receive."

4. Although the reports for 1862 and 1863, of the *State Hospital*, at Worcester, Mass., have been reviewed in former issues of the *Journal*, we now for the first time have the opportunity of noticing that for the year 1861.

	Men.	Women.	Total.
Patients in hospital, October 1, 1860	155	177	332
Admitted in course of the year	127	124	251
Whole number	282	301	583
Discharged, including deaths	98	106	204
Remaining, September 30, 1861	184	195	379
Of those discharged, there were cured	63	68	131
Died	14	16	30

Died with consumption, 7; epilepsy, 7; palsy, 5; old age, 4; marasmus, 3; maniacal exhaustion, 2; exhaustion, 2.

The number of "full days' work performed by the patients in the course of the year was—by men, 6,018; by women, 10,482; total, 17,500." "Besides this," says Dr. Bemis, "there is a great amount of labour performed by patients in and about the wards, dining-rooms, dormitories, and yards, which cannot be taken into account, because it is engaged in only at short intervals, and amounts simply to amusement and exercise. * * * We have, however, endeavoured not to forget that the great object of the hospital is the comfort and restoration of the insane, and that all questions of economy or profit should be subservient to this grand aim and object."

"The exercise of the mental faculties of the patients has been stimulated to some degree, and much recreation has been afforded by a course of lectures, by a series of concerts, by *tableaux vivantes*, and by magic lantern scenes. Daily walks and drives, social parties, and, during the winter, skating and coasting parties, have, as usual, been carried on with great animation."

5. "The general operations of the *Bloomingdale Asylum*, for the year 1863, are presented in the following table:—"

	Men.	Women.	Total.
Patients in hospital, January 1	76	81	157
Admitted in course of the year . . .	48	67	115
Whole number	124	148	272
Discharged, including deaths	54	76	130
Remaining, December 31	70	72	142
Of those discharged, there were cured . .	22	31	53
Died	6	8	14

"Several of the patients," writes Dr. Brown, "recorded 'improved' at time of leaving the asylum, were in a state of convalescence which terminated in complete recovery after a short residence at home. The deaths were attributable, in five cases, to exhaustion from severe maniacal excitement; in three cases, to pulmonary consumption; in three, to general paralysis; in two, to old age and its infirmities; and in one, to epilepsy. One patient had been fifty-five years in the care of the asylum. Five of those who died survived but a few days after admission."

6. "Success in a lunatic asylum," very correctly remarks Dr. Ranney, near the beginning of the report for 1863 of the *New York City Lunatic Asylum*, "depends in a great measure upon a freedom from active excitements, the establishment of correct habits, and a careful attendance in supplying the little comforts of life. A feeling of contentment, even under adverse circumstances, may be greatly promoted by these means. As happiness or unhappiness, in all, depends much upon moral training, so whatever tends to establish an evenness of temper aids not only in preventing insanity, but in actually restoring the diseased mind to its normal condition."

	Men.	Women.	Total.
Patients in hospital, January 1, 1863 . .	282	487	769
Admitted in course of the year . . .	123	219	342
Whole number	405	706	1111
Discharged, including deaths	143	197	340
Remaining, December 31, 1863 . . .	262	509	771
Of the discharged, there were cured . .			163
Died	68	49	117

Died with "phthisis pulmonalis, 43; *paralysie générale*, 24; erysipelas, 6; senectus, 6; paralysis, 4; debilitas, 4; diarrhœa, 5; congestio cerebri, 5; apoplexia, 4; typhomania, 2; hypertrophy of heart, 2; erysipelas, accidental drowning, suicide by suspension, peritonitis, valvular disease of heart, inflammation of bowels, injuries to abdomen, typhus fever, dysentery, ascites, phlebitis, and pyæmia, 1 each."

Thirty-one of the patients admitted, fourteen of whom were males and seventeen females, attempted suicide either before or after admission. The methods employed, and the frequency of each method, are thus recorded:—

	BEFORE ADMISSION.			AFTER ADMISSION.		
	Men.	Women.	Total.	Men.	Women.	Total.
Jumping from window .	1	0	1			
Hanging . . .	1	3	4	1	2	3
Drowning . . .	3	5	8	2	2	4
Cutting throat . .	2	2	4			
Taking laudanum . .		1	1			
Strangulation . .	2	1	3		1	1
Cutting arm . . .		1	1			
Not particularized .	1	1	2			
Beating head against wall					1	1
Starvation . . .				3	1	4
Total attempts .			24			13

Near midnight on the 11th of May, several tons of powder, in a magazine on the river shore opposite this hospital, exploded, the concussion greatly damaging the hospital building. "Nearly all the windows were broken—not only the glass, but the sashes; many doors were dashed open, destroying locks and hinges; plaster fell from the ceilings; furniture in the middle building was much injured; the roofs of the wings were raised; and the slates on the new asylum so far broken as to necessitate the building of a new roof."

7. Allusion has been made, perhaps more than once, in our former notices of reports, to the existence, in the State of New York, of a hospital for insane persons who are suffering the penalties of the law under conviction for crime. The establishment referred to is within the walled inclosure of the State prison at Auburn, and is known under the title "*New York Asylum for Insane Convicts.*" It was erected in obedience to an act of the State Legislature of the year 1855; but as no appropriation for the purpose was made until 1857, it was not begun until the year last mentioned. It was intended for the accommodation of 64 patients. Its first annual report, signed by the Superintendent, Dr. Edward Hall, is dated October 1st, 1860. The hospital had then been in operation twenty months. The whole number of patients received up to that time was 69. "Of these, 29 were from Sing Sing, 28 from Auburn, and 12 from Clinton (State) prisons." Fourteen had been discharged.

"No death or serious accident," says the report, "has occurred among our inmates, and their general condition and improvement has, with a few exceptions, been encouraging. The various amusements and exercises that have been introduced, have assisted in occupying and improving the patients; and the regular performance, for a few hours each day, of out-door labour, has proved especially beneficial. * * * A variety of useful work has been performed by patients in the carpenter's shop, and nearly all our light iron-work is now done by patients in the blacksmith's shop, who have, besides, made many useful and ornamental articles for the house and garden."

The subjoined remarks in relation to the time of origin of the insanity of the convict patients, will be read with interest.

"Comparing the number of convict insane with the same class in other States, we must infer that many are here sent to prison who are already insane, or who have committed their crimes under insane influences, and are the proper subjects of a criminal asylum rather than of the State's prison. It is a significant fact that we received from the prisons, with several of our patients, the report, 'In the same condition when he entered the prison.'

"Some cases of insanity have, no doubt, originated in prison, from various causes, such as mental distress, severe punishment, long-continued feigning insanity (which sometimes results in dementia), and the constant practice of vicious habits, often commenced before imprisonment. Yet there is little in ordinary prison life which would produce insanity, with most of the convicts, while there is much in the regular habits, order, and discipline which would counteract its physical causes."

In the course of the fiscal year ending September 30, 1861, 30 patients were received, making the whole number for the year 85. Of these 12 were discharged, and 4 died, leaving, at the end of the year, 69. Of the four fatal cases "one died of phthisis, one of heart disease and paralysis, one of disease of heart, and one of general paralysis."

"The result in regard to the cure and improvement of the patients has been more satisfactory this year than during any previous time since the asylum was opened. * * * The garden and grounds have furnished useful and beneficial employment for a large number of our inmates. The vegetable garden has yielded a substantial return in the abundance of good fruit and vegetables. * * * The flower garden has been a source of great pleasure and delight, and has been self-supported by the sale of seeds and roots, and by prizes obtained at the county fair."

In the course of the next official year, Dr. Hall resigned the office of Superintendent, and was succeeded by Dr. Charles E. Van Anden.

Patients in hospital September 30, 1861	69
Admitted in course of the year	27
Whole number	96
Discharged, including *one* who died of "convulsions"	15
Remaining, September 30, 1862	81

Of those who were discharged, 12 were "apparently well." Dr. Van Anden says the amount of labour performed by the patients "equalled if not exceeded that of the previous year. * * * No department has been carried on without their constant co-operation." He remarks that "were it not for the sad exigencies of the times," he would recommend an enlargement of the buildings. In his report for 1862–3, to which we now pass, such enlargement *is* recommended.

Admitted in course of the year 10, making the whole number	91
Discharged, including two deaths	12
Remaining September 30, 1863	79

Of the discharged, 5 returned to prison "well;" 3 escaped "well;" and 1 was pardoned "well."

"Besides discharging during the year some cured and others much improved, we have afforded shelter and the comforts of life to many a one who, at the expiration of his term of sentence, would have been left without care or protection, and abandoned to a miserable state of want and penury."

8. We have before us the annual reports of the *Maryland Hospital* for the four years from 1860 to 1863, inclusive. They are so brief that we shall review them collectively.

	Men.	Women.	Total.
Patients in hospital, January 1, 1860	54	52	106
Admitted in the course of four years	265	82	347
Whole number	319	134	453
Discharged, including deaths	255	83	338
Remaining, December 31, 1863	64	51	115

Of the 347 patients admitted, 107 had mania-à-potu, one of whom died.

Insane patients discharged cured	86
" " died	30

Dr. Fonerden's reports contain but very little matter interesting in a medical point of view. We take one paragraph relating to improvements, from the report for 1863.

"Of various plans lately introduced to interest the patients, I will name some. A large parlour on the first floor of the centre building has been set apart as a dining-room for female patients who are convalescing, and for others who, though not convalescing, are attentive enough to their surroundings to feel an appreciation of this arrangement. Three times a day the company who are entitled to seats at the table in this room, have the privilege of going into the centre building, of feeling more at liberty, and of having very agreeable accommodations at meals. Another large parlour in the centre building, on the second floor, has been appropriated to social uses as an amusement parlour. A very good bagatelle table has been placed in it, together with other means of recreation. This parlour is resorted to in the afternoons by companies of female patients, sometimes from the first and at other times from the second floor of the wing occupied by them. Through the generosity of a member of the Board, Mr. Enoch Pratt, a billiard-table has been presented to the male department. It has been placed in a room convenient of access, to which many of the patients daily resort. The table has become a centre of amusement to lookers on as well as to the players."

9. All the reports hitherto issued by the officers of the *Longview Asylum* have passed under our review, with the single exception of that for the fiscal year ending October 31, 1862, which we now proceed to notice.

	Men.	Women.	Total.
Patients in hospital, November 1, 1861 . .	169[1]	191	357
Admitted in course of the year . . .	79	59	138
Whole number	245	250	495
Discharged, including deaths	77	72	149
Remaining, October 31, 1862	168	178	346
Of the discharged, there were cured . .	48	44	92
Died	17	14	31

Died with consumption, 15; epilepsy, 3; chronic diarrhœa, 2; maniacal exhaustion, 2; general paralysis, 2; typhoid fever, erysipelas, suicide, and pneumonia, 1 each; "received *in articulo mortis*," 3.

Dr. Langdon says that three thousand trees were transplanted, in the course of the year, from the adjacent forests to the hospital premises. And all this, together with much other work, was done by the "inmates." If the word "inmates" is here intended to apply to patients alone, the feat was a brave one; but we fear that some of the transplanted trees will not flourish.

In representing the difficulties in the way of regular religious exercises which could be satisfactorily conducted, the doctor says: "We have Jews and Christians, Protestants and Catholics, Spiritualists and Infidels here, all as firmly convinced of the truth of their own particular doctrines, and as intolerant of any other as if they were quite rational."

10. As we have not hitherto received the report of the *Insane Asylum of California* for the fiscal year 1859-60, we are obliged to leave a hiatus which it is hoped may hereafter be filled. By the report for 1860-61, it appears that Dr. Aylett, retired from the superintendence of the hospital on the 20th of April, 1861, and was succeeded by Dr. W. P. Tilden.

	Men.	Women.	Total.
Patients in hospital, December 1, 1860 . .	332	85	417
Admitted from Dec. 1, 1860, to April 20, 1861	95	26	121
Whole number	427	111	538

"During the same period," says Dr. Tilden, "there were eighty-five (85) discharged, died and eloped; but how many of them were discharged cured, or improved, or unimproved, or how many died or eloped, I am unable to determine with accuracy from the records. On the books, at the time I took charge, there appeared the names of twenty patients who were not in the asylum at the time, and in regard to whom I can find no record of discharges, deaths, or elopements; and at the same time there were seven patients in the institution respecting whom there were no records of any kind to be found in the books left in my possession."

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[1] Thus in the report; it doubtless should be 166.

	Men.	Women.	Total.
Patients actually in hospital, April 20, 1861	362	91	453
Admitted to November 30, inclusive	159	39	198
Whole number	521	130	651
Discharged	149	39	188
Eloped	14		14
Died	30	3	33
Remaining, December 1, 1861	328	88	416

Died with consumption, 7; acute mania, 4; ulceration of bowels, 4; epilepsy, 4; paralysis, 4; inflammation of brain, 2; marasmus, 2; effusion on brain, apoplexy, induration of liver, convulsions, and dropsy, one each.

Of the 319 patients admitted in the course of the year, only two, both of whom were women, were natives of California.

This report is essentially different in character from any other from the California hospital which has come under our observation. Aside from its statistics in relation to the patients, it is almost wholly devoted to the financial and material interests of the institution: and the particular object appears to be an exposition of the defects of the hospital as a curative establishment.

"Its beautiful edifice," says Dr. Tilden, "its well cultivated yards and garden, its wholesome food, its comfortable clothing, its scrupulously clean halls, rooms, beds and bedding, its excellent police regulations, combine in making a prison of the first class; and if such was the original purpose, I see not how it could have been more admirably accomplished. If, however, in creating a charity so munificent, so noble, it was intended to establish an asylum, with hospital appliances, for the *cure*, as well as the care and safe keeping of the insane, I am free to say it is, in my opinion, a most signal failure." And again, further on, he says: "If there is any marked difference between it and a well conducted State prison, it is in favour of the latter, from the fact that means of employment are provided for its inmates, while the inmates of the asylum spend their days in idleness." And again: "It will hardly be contended, I think, that our newspapers and a little gymnasium, with a solitary swing in the female department, can give the Asylum of California a claim to the character of a curative institution."

The principal defects mentioned are great overcrowding of the halls, with consequent foul air; the absence of appropriate furniture and means of labour, recreation, and entertainment; the impossibility of classification, and the consequent compulsory association of the educated and refined with the ignorant, the immoral, the debased. P. E.

ART. XXI.—*Medical Lexicon: A Dictionary of Medical Science, containing a Concise Explanation of the Various Subjects and Terms of Anatomy, Physiology, Pathology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Obstetrics, Medical Jurisprudence and Dentistry; Notices of Climate and of Mineral Waters; Formulæ for Officinal, Empirical and Dietetic Preparations, with the Accentuation and Etymology of the Terms, and the French and other Synonymes, so as to constitute a French as well as English Medical Lexicon.* By ROBLEY DUNGLISON, M. D., LL. D., Professor of the Institutes of Medicine, etc., in the Jefferson Medical College of Philadelphia. Thoroughly revised and very greatly modified and augmented. 8vo. pp. 1047. Philadelphia: Blanchard & Lea. 1865.

EVERY page of this new edition of Dr. Dunglison's well-known Medical Dictionary presents ample evidence of the very great care which has been exercised by the author in the thorough revision of the work; the important modifications it has, in consequence, undergone, and the numerous additions that have been made to it. It embraces, in its present form, unquestionably, a more complete and accurate list, than any other of the professional dictionaries in common use, of the terms which appertain to the nomenclature of the different departments of medical science, as well those in use heretofore as those which have been introduced recently by the progress and discoveries which are constantly being made in every department of medicine.

The strictest attention has evidently been directed to give a correct and satisfactory definition, a true etymology, and a proper accentuation, adapted to lead to a just pronunciation of the several words embraced in the volume—to render it, in short, as far as possible, a complete, accurate, and useful lexicon of medical terms:—one, in searching which the inquirer will not be disappointed in finding all that he is desirous of knowing in respect to the proper usage of every word that has been legitimated into medical nomenclature.

We are free to confess that we know of no medical dictionary more complete; no one better, if so well adapted for the use of the student; no one that may be consulted with more satisfaction by the medical practitioner. Similar language we have held in reference to the work from its first appearance; we, nevertheless, admit with the author, that the edition before us presents "more claims on the attention of student and practitioner than either of its predecessors;" upon neither of them, it is evident, has the same amount of time and labour been expended. D. F. C.

ART. XXII.—*A Practical Treatise upon Eczema, including its Lichenous, Impetiginous, and Pruriginous Varieties.* By T. M'CALL ANDERSON, M. D., Fellow of the Faculty of Physicians and Surgeons, Physician to the Dispensary for Skin Diseases, &c. &c. John Churchill & Sons. London, 1863.

DEVERGIE and Erasmus Wilson both assert that eczema constituted one-third of all the cases of skin disease which came under their care. The frequency of its occurrence in practice, the suffering it occasions, and its increasing prevalence of late years, leads us to believe that some notice of the treatise of Dr. Anderson cannot fail to be acceptable to our readers.

Following Hebra, the celebrated dermatologist of Vienna, our author has studied eczema in a more philosophical manner than has hitherto been done by the older British writers on skin diseases. Discarding the artificial classification of Willan and Bateman, he maintains that skin diseases are best classified not upon their elementary lesions, but according to the nature of the affection. He admits, however, the importance of the elementary lesion, which, in eczema, as he points out, may be a vesicle, a pustule, a papule, a fissure, or a mixture of several or all of these lesions, and he maintains that impetigo, lichen, and prurigo are merely varieties of that disease.

The most prominent symptoms of eczema are, the infiltration of the skin, the exudation on the surface, the formation of crusts, and itching.

We shall not stop to notice the many distinct appellations given to eczema in its different stages and from its various locations, which have tended so much to confuse students and retard our knowledge of the disease.

The *etiology* of eczema is fully discussed by our author. He states that the affection attacks, in preference, those of the lymphatic temperament, the scrofulous and debilitated, but that persons in the most robust health are also often affected. Improper, insufficient or bad food is apt to call it forth; and, on the other hand, a too liberal diet and too stimulating food and drink, and mental excitement occasionally predispose to it. Atmospheric vicissitudes may give rise to the affection; it occurs more commonly in summer and winter than in spring and autumn. It is sometimes apparently hereditary. Its occurrence is favoured by any occupation which heats the body and produces perspiration, especially on those parts which are in contact with one another; and it may be called forth by various stimulating applications to the skin. A varicose condition of the veins, keeping up a constant hyperæmia of the parts, as we meet with most frequently on the legs and about the anus, is a powerful predisposing cause, as are also tumours pressing upon veins.

Dr. A. considers the *diagnosis* of most cases of eczema to be by no means difficult, if the more prominent and least variable symptoms pointed out are borne in mind.

Erythema is distinguished from eczema by its presenting a simple redness of the skin without any appreciable infiltration or exudation on the surface, and by the absence of vesicles, pustules, fissures, and crusts.

From scabies it may be distinguished by the history of the disease, which usually shows the former to be communicated by contagion; the little canals which the itch insect forms in the skin may also usually be discovered, and by the aid of the microscope the acarus itself.

"A typical case of psoriasis," Dr. A. observes, "can never be mistaken for a typical case of eczema, but when patches of the former have lost their characteristic silvery scales, and when itching is complained of, as sometimes happens, they may be mistaken for eczema. But, in psoriasis, the patient's account of the appearance of the eruption at an earlier stage, the more dusky colour of the inflamed parts, the absence of that punctated appearance of the surface so often met with in cases of eczema, and of all moisture, the occurrence of characteristic patches of the disease on other parts of the body, the detection of the eruption on the elbows or knees, and the history of the case should, in general, prevent error."

In pemphigus foliaceus, which may be mistaken for eczema, Dr. A. says "the eruption usually commences on the front of the chest; when fully developed it covers the whole body, without leaving intervals of sound skin; it is almost always fatal; bullæ are usually to be detected at some period of the disease; the infiltration of the skin is not great; itching not usually excessive; the scales and crusts are very large. In eczema, on the other hand, the eruption has no particular tendency to commence on the front of the chest; it never covers the whole body without leaving intervals of sound skin; it is never fatal; bullæ are not to be detected except in a few cases, and then on the soles and palms only, owing to the thick cuticle preventing the bursting of the vesicles; the infiltration of the skin is often great, the itching excessive, and the scales and crusts are not so large as in pemphigus foliaceus."

The syphilitic eczema may be mistaken for non-syphilitic, but the history of the case will usually enable us to form a correct diagnosis.

The *prognosis* in eczema is rarely serious; almost invariably the disease is curable. "The most serious cases are those in which the eruption covers the greater portion of the cutaneous envelope, especially when it occurs in very young infants or in old or infirm persons. In these instances, the natural functions of the skin are interrupted, and the itching may give rise to serious symptoms, such as convulsions, fever, exhaustion from anorexia, loss of sleep, &c. It is a very rare circumstance, however, for eczema to terminate fatally."

Dr. A. ridicules the idea of there being any danger from the rapid cure of the disease; and he asserts that he had never seen enduring ill consequences follow, where proper precautions are taken.

The signs of amendment are "when the disease does not tend to spread by the extension of old patches or the formation of new ones, and when no new crops of eruption make their appearance upon the old patches. It is always a favourable occurrence when the infiltration, exudation, and itching diminish. When these symptoms are nearly gone, erythematous and scaly patches are usually left; but, if the disease is progressing towards a cure, the redness gradually subsides, the scales disappear, and the skin resumes its healthy appearance and feeling. It requires, however, to be mentioned, to avoid disappointment, that, when the eruption appears to be rapidly declining, sometimes for some obvious reason, oftener without any assignable cause, the improvement suddenly ceases, a retrograde movement takes place, and, in a few days, the cure is as far off as ever.

"When the disease has disappeared, there is usually no trace left of the previous eruption, unless ulceration has occurred, and even then the surface usually resumes its healthy appearance, as the ulcers are for the most part superficial, and do not destroy the deeper tissues of the skin."

There are few diseases more curable, Dr. A. asserts, than even severe forms of eczema. The *means of cure*, which may be divided into *constitutional* and *local*, must vary according to the age, existing state of health and constitution of the patient, and the seat, extent, and severity of the eruption.

As in all other diseases the condition of the internal organs should be ascertained, and any deviation rectified by the usual remedies. Derangements of the digestive organs require especial attention, and should be remedied preparatory to any special treatment of the cutaneous affection. This being accomplished, the internal treatment, our author remarks, radiates in two directions, according as the eruption occurs in those in apparently robust health, or in those who are scrofulous or debilitated from insufficient or unnutritious food, or from previous disease.

In the latter, nourishing food, tonics (especially those containing iron), and cod-liver oil are considered by Dr. A. as our sheet-anchors. He has, he states, repeatedly cured very severe cases of eczema by the systematic administration, for a couple of months, of cod-liver oil and syrup of the iodide of iron without other treatment of importance.

When the appetite is very deficient, a pure tonic may be substituted for a ferruginous one, as small doses of quinia and sulphuric acid, or, when the stomach is too weak for this, a little dilute sulphuric acid alone may be tried.

In the opposite class of cases—when it occurs in those who appear to be in good health—the abstraction of blood by means of the lancet, which is recommended by some, Dr. A. very justly considers to be rarely necessary. Local bleeding may sometimes, he says, be resorted to if the patches of eruption are much inflamed, and especially if the lower extremities are affected; but in almost all cases purgatives—especially those containing calomel—answer all the ends in view.

"The diet must be carefully regulated, and the patient warned to eat very moderately and slowly, and to masticate his food well. A simple mixed animal and vegetable diet may be recommended; dressed dishes, pastry, pickles, spices, strong tea, and coffee, being particularly avoided. The use of wine, spirits, and malt liquors must, in general, be suspended for a time, at least, though in some instances they may be taken sparingly. But one must be cautious, in the case of those who have previously been in the habit of taking them in excess, of discontinuing them all at once, and it must be remembered in reference to prognosis, that the cure of an eczema is much more difficult when the patient has been much addicted to the use of stimulants.

"In some cases it will be found of advantage to prescribe milk diet for a time, all animal food being avoided."

There are three classes of internal medicines upon which our author places reliance for the removal of the eczematous eruption. These are the preparations of arsenic and sulphur, and alkalies. Of the arsenical preparations the one which he is most in the habit of employing is Fowler's Solution (liquor potassæ arsenitis, U. S. P.), and which is certainly one of the best. Dr. A. says of this an adult may commence with five minims thrice daily; and at the end of a week or so, if it agrees, the dose may be increased a drop every second or third day, till the disease begins to yield or the medicine disagrees. He does not "think it necessary to stop it if slight irritation of the eyes or puffiness of the face is induced; but if these symptoms are at all aggravated, and especially if they are accompanied by pains in the stomach and head, anorexia, and nausea, the dose should be diminished, or in some cases omitted for a few days. On no account, however, should its administration be omitted altogether, because these physiological effects are produced; and I thoroughly indorse the statement of Dr. Begbie, that, 'in order to secure its virtues as an alterative, it will be necessary to push the medicine to the full development of the phenomena which first indicate its peculiar action on the system. Arsenic, as a remedy, is too often suspended, or altogether abandoned, at the very moment its curative powers are coming into play. The earliest manifestation of its physiological action is looked upon as its poisonous operation; the patient declares that the medicine has disagreed with him; forthwith the physician shares his fears; the prescription is changed, and another case is added to the many in which arsenic is said to have failed after a fair trial of its efficacy.'"

We ourselves think it safer to commence with four drops three times a day in a wineglassful of water administered *immediately after a meal*, and increasing it at longer intervals, say every five or six days, and reducing the dose or suspending the medicine entirely for a few days if it disagrees with the stomach. We have been entirely satisfied with the result of such a course. When the stomach is weak, the solution may be given in some tonic infusion, as recommended by our author.

As the disease yields the dose may be gradually diminished; but Dr. A. advises it not to be suspended until some time *after the complete removal* of the eruption.

"In cases of infants at the breast," Dr. A. says, "it is advisable to administer the arsenic to the mother, whose milk thus furnishes not only nourishment to her babe, but likewise an antidote to its complaint. In children of one or two years one minim may be given twice daily, and the dose gradually increased."

In some cases it may be thought best to combine arsenic with mercury, as in Donovan's solution, and in others to give it combined with iodine, in which case Dr. A. commends the following prescription of Neligan: ℞. Soluf. potass. arsenit. ♏lxxx; iodid. potassii, gr. xvi; iodini, gr. iv; syrupi florum aurantii, ℥ij.—M. Sig.—A teaspoonful in a wineglassful of water thrice daily.

The preparations of sulphur, though not so generally useful as those of arsenic, Dr. A. considers highly serviceable in some cases, especially in persons of the lymphatic temperament, and when the disease is on the decline. To derive the full alterative effect of the remedy it is advisable to prescribe a course of a natural mineral water containing sulphur.

Alkalies are much less generally employed than arsenic or sulphur. The alkalies, according to our author, "are most beneficial when the patient is much addicted to the use of stimulants, and when there is a tendency to acidity of the stomach and to the deposit of lithates in the urine, or to gout or rheumatism. The preparation most in vogue is aqua potassæ, which may be given, largely diluted with water, in doses of twenty minims thrice daily to an adult. The alkali which I am most in the habit of using, however, and which has not, I think, been tried hitherto in this country for such a purpose, is the sesquicarbonate of ammonia in doses gradually increasing from ten up to thirty or even forty grains thrice daily, care being taken that the preparation is fresh and of full strength. A dose of forty grains is often borne well by a patient whose stomach has been gradually accustomed to its reception, while a smaller dose often occasions vomiting in the case of those who have not been in the habit of taking it. Sometimes it is well to combine the ammonia with Fowler's solution or one of the other arsenical preparations. If there is a decidedly gouty tendency, small doses of wine of colchicum (say ten drops), and in rheumatic habits, the acetate or bicarbonate of potash (in half-drachm doses) may be added to each dose. The alkalies must be given *largely diluted* with water, and the dose must be gradually increased till the medicine disagrees or the eruption begins to fade."

Dr. A. lays down the following rules for the employment of alterative medicines, which should be carefully attended to:—

"1st. Let the dose, at first small, be gradually increased till the medicine disagrees, or till the disease begins to yield, and then let it be gradually diminished.

"2d. If the medicine disagrees, do not omit it altogether without very good reason, but try it in smaller doses, or in another form, or omit it for a few days till the bad effects have passed off.

"3d. To give it a fair trial, it must be continued for a considerable period of time, because in some cases the eruption does not disappear till after it has been administered for many weeks.

"4th. Do not permit the patient to give up taking the medicine till some weeks have elapsed since the complete disappearance of the eruption."

While fully admitting, as all must do, the utility of constitutional treatment, which, in many instances alone is capable of curing the disease, Dr. A. believes that "the *local* treatment is even more effectual than the constitutional." This appears to us to be rather strong language; for while the *constitutional* treatment alone will often cure the disease, we doubt if the same can be said of the *local*, unless when the disease affects only a very limited portion of the skin.

The first point in the local treatment is to remove all the crusts; for until this is done we cannot judge of the condition of the parts beneath. Dr. A. recommends for this purpose "a poultice composed of crumb of bread and hot almond oil to be applied to the eruption at night, and if the crusts do not come away with the poultice in the morning, the part should be lubricated with fresh almond oil, and the crusts removed with the finger nail about half an hour afterwards, when they have become thoroughly softened. When the crusts reappear, as frequently happens, especially at the commencement of the treatment, they must invariably be removed before the reapplication of the curative agent."

After the crusts are removed, Dr. A. says, "if the eruption has just made its appearance, if the surface is acutely inflamed, if it is studded with numerous vesicles or pustules, but particularly if *burning heat* is complained of in place of itching, local sedatives must be employed."

When there is considerable infiltration of the skin, Dr. A. recommends the potash applications as employed by Hebra.

"If the infiltration is slight, or the rash extensive, common *potash soap* (soft soap, black soap, sapo mollis, sapo viridis), or a solution of one part of it in two of boiling water, a little oil of rosemary or citronella being added to conceal in part the odour, may be used.[1] A piece of flannel dipped in this should be rubbed as firmly as possible over the affected parts night and morning, and the solution allowed to dry upon them, though it should be washed off before each reapplication; or a piece of flannel wrung out of the solution may be applied to the part, and left in contact with it all night if the patient can bear it.

"A more elegant preparation is the *aqua potassæ* (Ed. Ph.), which may be painted over the eruption night and morning with a large brush, its irritant properties being neutralized by means of cold water when the smarting becomes excessive.

"Instead of soft soap or aqua potassæ, solutions of *potassa fusa* may be employed. In the mildest cases, with only slight infiltration, two grains of potassa fusa, in the more severe, five, ten, twenty, thirty grains, or even more, in an ounce of water may be used, but I rarely resort to a stronger solution where the eruption is extensive."

When the strong applications are used, and there is a tendency to the formation of fissures, it is recommended to apply cod-liver oil or glycerine to the parts every night. Our author very judiciously cautions the practitioner, when these solutions, and especially the stronger of them are used, in the case of infants or delicate females, or infirm patients, to observe great care in their use, lest the shock they produce be followed by serious results.

While these preparations are being employed, cold water, our author says, is a very agreeable and useful adjunct. The affected parts may be bathed repeatedly with it during the day, or cloths wrung out of cold water may be placed upon the eruption, or the cold douche may be used.

We think that we have derived more benefit from the application of cloths wet with tepid water applied to the eruption, over which is placed oiled silk and a bandage. This reduces the inflammation and allays the itching. This last symptom is often so intolerable that, however much we may endeavour to impress upon the patient the fact that scratching keeps up and aggravates the disease, he finds it impossible to abstain. To allay the itching, Dr. A. recommends the potash and zinc preparations and lotions of dilute hydrocyanic acid in proportions varying from five minims to ʒi, in an ounce of water or glycerine, or the cyanide of potassium in ointment; but when the disease is extensive these preparations are not free from danger. Dr. A. speaks highly also of camphor, in the form of camphorated oil, or camphor ointment for the purpose of moderating the itching. It is always well to have a variety of remedies, owing to the differences in patients. In very many, severe applications do not agree, while we do not remember one who has not been benefited by the water dressing. Tepid baths, taken nightly or every alternate night, we have also found very serviceable. They allay the itching, calm the system, and enable the patient to sleep. The following application, also, affords relief, in some cases, to the intense itching: ℞. Acet. ammon., ℥ij; alcohol, ʒiiss; aq. rosæ, ℥iiss.—M.

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[1] ℞. Saponis mollis, ℥i; aquæ bullientis, ℥ij; olei citronellæ, ʒss.—M.

We have likewise often used soap with great relief to the itching—the shaving soap made in this country by John B. Vroom, under the name of "walnut oil soap," answers extremely well. This is to be dipped in water, well rubbed over the eruption, and allowed to dry. It proves a most soothing application in many cases.

Our author, in common with most practitioners, attaches great value to tarry preparations; but he correctly observes, that they are chiefly of use in the declining stages. The most elegant of these preparations is the oil of Cade. A most admirable preparation, one of Hebra's, which is recommended by our author, and which we have used with great advantage, is the following: ℞. Saponis mollis, alcohol, olei Cadini, āā ℥i; olei lavendulæ, ʒiss.—M. A little of this is to be rubbed over the eruption night and morning, and washed off before each application.

The preparations of mercury and sulphur Dr. A. considers most beneficial when the infiltration and exudation have gone and the itching moderated. Of the former, the citrine ointment is our author's favourite application, which may be used of its full strength or diluted with lard, and if it is indicated a few grains of cyanide of potassium may be added to allay the itching. If a lotion is preferred, from one to four grains of the bichloride of mercury may be dissolved with the aid of a little alcohol, and mixed with an ounce of rose-water, while a little dilute hydrocyanic acid may be added if necessary—the solution being rubbed into the part two or three times daily. The possibility of absorption should be borne in mind when using mercurial or hydrocyanic preparations, locally to extensive surfaces, lest the constitutional effects of them be produced. We think that these preparations are often recommended by writers without sufficient caution.

The common sulphur ointment, of full strength or diluted, and with or without the addition of cyanide of potassium, is considered by our author as a very useful application.

When an ointment is used, it is recommended that "a very small quantity should be melted on the point of the finger, and rubbed firmly into the affected part, and none of it should be allowed to lie undissolved upon the skin, nor, in most instances, should its colour be perceptible after its application; the surface should merely have the appearance of having been recently moistened with pure water. The part should always be cleaned with soap and water before reapplying the ointment; for if layer after layer be smeared upon the skin, it becomes rancid, acts as an irritant, and is calculated rather to be prejudicial than otherwise."

When the eczematous eruption occupies a limited extent of surface, it usually requires, Dr. A. thinks, to be attacked by strong local applications, as strong solutions of potassa fusa, or chloride of zinc, or tincture of iodine, or cauterization with nitrate of silver; but of all local means for the removal of limited eczematous eruptions, he considers none to be equal to blistering them, and the best for this purpose is the glacial acetum cantharidis. "It should be made," he says, "in small quantities at a time, and kept in a good stoppered bottle, the stopper being removed for as short a time as possible, and, when not in use, covered with leather, otherwise its strength soon diminishes, and much annoyance is thereby occasioned. A little of this solution should be taken up by means of a paint-brush, and painted firmly over the part till it becomes perfectly white. If the fluid is of full strength, and the skin thin, as on the face, it usually blisters it at once; but if the opposite holds, and especially if the head or palms of the hands are to be blistered, it may require to be painted over them for several minutes. After the skin is *thoroughly whitened*, a hot poultice may be applied, but the skin rarely 'rises' so completely as after a common blistering plaster. One application is often sufficient to remove the eruption; but, if necessary, it may be repeated weekly, the crust produced by the previous eruption being softened with oil and removed before each reapplication."

Dr. A. concludes his treatise with the consideration of the *local varieties of eczema*. This disease, though it may affect any part of the skin or almost the whole at one time, seems to seize, in preference to others, certain localities. These are the head, hairy portions of the face, lips, edges of the eyelids, nostrils, external auditory passages and ears, hands, feet, legs, genitals, anus, umbilicus, and those parts of the skin which are naturally in contact with one another.

These varieties are described by most writers on cutaneous diseases, and as we do not find that our author has suggested any novel modes of treatment for them, we shall here close our notice of his admirable work, which we must consider as a valuable contribution to dermatology.

ART. XXIII.—*Guy's Hospital Reports.* Edited by SAMUEL WILKS, M.D. Third series, vol. x. London: John Churchill & Sons, 1864. 8vo. pp. 400.

THE present volume of this valuable publication contains nineteen original communications and fourteen lithographic plates. In accordance with our practice, we shall lay before our readers a full analysis of its contents.

I. *Fourth Report of the Guy's Hospital Lying-in Charity.* From October 1, 1854, to September 30, 1863. Collated from the records by J. BRAXTON HICKS. Presented by H. OLDHAM, M.D., and J. BRAXTON HICKS, M.D., F.R.S.

This report, embracing a period of nine years, during which time 14,871 cases of midwifery were attended to, is an important contribution to obstetrical statistics.

The two following tables, showing the number of the various presentations that were met with, will be read with interest.

TABLE I.—*Of Presentations under which the* Living *Children were Born.*

Males, 7476 = 52.00 per cent. Females, 6899 = 47.99 per cent. Total, 14,375.

	Males.		Females.		Total. Per cent.
Vertex	Full term 7305 Premature 18	7323	Full term 6728 Premature 16	6744	14,067=97·8
Vertex and funis		6		0	6= .04
Vertex and hand		7		6	13= .09
Transverse and varieties		8		8	16= .11
Pelvic & podalic	Full term 102 Premature 1	103	Full term 144 Premature 2	116	219= 1.5
Funis (conditions not mentioned)		4		3	7= .05
Face		25		22	47= .32
Total		7476	Total	6899	14375

TABLE II.—*Shows the Presentations under which the* 623 Stillborn *Children were delivered.*

Of whom mention is made in 587, 347 were males, 238 were females, or as 1 to .67.

	Males.		Females.		Total. Per cent.
Vertex	Full term 225 Premature 33	258	Full term 141 Premature 21	162	420=67.0
Transverse and varieties	Full term 16 Premature 1	17	Full term 16 Premature 3	19	36= 5.7
Podalic and pelvic	Full term 60 Premature 14	74	Full term 43 Premature 11	54	128=20.0
Face		0		3	3

Sex not mentioned.

			Total.
Funis	Cephalic	21	30
	Transverse	5	
	Podalic and pelvic	4	
Uncertain			6

The death-rate of the present report is 1 in 340. from all causes whatever. The death-rate of the preceding twenty-one years, was 1 in 140. The improvement is owing in a great measure to the diminution of puerperal fever, which is mainly attributable to the separation of the attending physician from other cases, whenever this disease shows itself in his practice. It is to be remarked that the lying-in charity at Guy's Hospital is an *out-of-door*, and not an *in-door* charity.

The fatality in funis presentation is said to be owing, partly at least, to the tendency of the funis to present itself where the fœtus is dead before the commencement of labour. The small mortality in all face presentations is to be noticed, and also the fact that nearly all were delivered by natural powers. A large number of cases of complicated labour are given in detail, under the heads of *placenta previa, forceps, craniotomy*, &c., which are worthy of attentive study by those who devote themselves to the practice of obstetrics.

II. *On the Treatment of Granular Conjunctivitis by Inoculation with Pus.* By C. Bader, Ophthalmic Assistant Surgeon.

This paper is the result of a series of cases, some 157 in number (240 eyes), of granular conjunctivitis, with and without pannus, treated during a period of over six years at Guy's Hospital and the Royal London Ophthalmic Hospital, by the inoculation of gonorrhœal matter.

Gonorrhœal ophthalmia is so terrible a disease, that its inoculation, if ever to be practised, should certainly only be had recourse to in the most desperate cases, and after all other means have failed. This, with but rare exceptions, has been, and is now, the opinion of the profession. There is nothing to change this opinion in the present paper. Many of the cases recorded by Mr. Bader are curable by the careful and patient use of nitrate of silver and other perfectly manageable remedies, and we fail to see that he has succeeded in any cases with gonorrhœal pus that could not have been benefited by other means.

All cases of granular conjunctivitis, says Mr. Bader, can be cured by inoculation; but if the entire or part of the cornea be transparent, *the difficulty arises of producing such a suppuration as will destroy the granulations without leading to destruction or perforation of the cornea.* In another part of his paper he says that perforations of the cornea and changes in the lids were not specially attended to during the continuance of the purulent discharge.

III. *On the Medical Preparations of Arsenic.* By S. O. Habershon, M. D.

This paper gives a slight historical sketch of the use of arsenical preparations in medicine, and some general rules for their administration in the three forms of diseases in which arsenic is found of service, namely, in certain affections of the nervous system, in diseases of the skin, and in miasmatic poisoning. These rules are as follows:—

"1. The preparations of arsenic are best given in solution; the medicine can be more accurately measured and its dose better proportioned; in the fluid state they are more readily absorbed, and the action is more efficient.

"2. The best time to take the remedy is soon after a meal; for in this way any irritant effect is less likely to occur, and the drug may be increased in quantity, and its use continued for a longer period than could otherwise be the case.

"3. If it be desired to give arsenic with quinine, the acid solution in hydrochloric acid will be found to be a convenient form for administration.

"4. In states of great febrile excitement, especially when associated with furred tongue, retained excretions, and congestion of the chylopoietic viscera, arsenic is not well borne; and it is well to attempt the removal of these symptoms before commencing its use.

"5. In states of great irritability of the stomach and bowels, it is better to postpone its use till those symptoms have been relieved.

"6. In diseases of the nervous system having among their symptoms a contracted state of the pupil, with vertigo, arsenic is not generally of service. Thus, some forms of neuralgic pain in the head are greatly relieved by arsenic, but we shall often be disappointed in its efficacy unless the instances be carefully selected.

"7. If menorrhagia and dysmenorrhœa be present with maladies in which arsenic might be of service, the former symptoms will often be aggravated by its administration.

"8. Although strumous disease does not necessarily preclude arsenical medicines, they are better avoided where much enlargement of the lymphatic glands exist.

"9. In acute diseases of the skin, preparations of arsenic are often prejudicial.

"10. They are of but little service in true syphilitic eruptions.

"11. Disappointment in the efficacy of arsenic has often arisen from the dose not being properly increased, and from the discontinuance of the remedy before the disease has been thoroughly cured.

"12. Whilst the experience of the profession more than confirms its value in chronic skin disease, in cancerous disease it is regarded as comparatively valueless as an internal remedy, and dangerous as an external one.

"13. Although irritability of the stomach and bowels, as well as of the mouth and conjunctiva, may be induced by arsenic, these symptoms do not necessarily compel us to discontinue its use, for a diminution of the dose, and admixture with an opiate, may remove the symptoms.

"14. Where very minute and continued doses induce a general sense of exhaustion, with compressibility of the pulse and loss of appetite, although there is no irritation of the mucous membrane of the alimentary tract, the arsenic must for a time, at least, be discontinued.

"15. The acid solution of arsenic may often be used very advantageously with the preparations of iron, and in some forms of chronic disease of the skin in strumous subjects the solution of the iodide of arsenic will be found an exceedingly advantageous form of administration, as recommended by Biett,[1] Thomson,[2] Neligan, &c.

"16. The arseniates of soda and of iron have been recommended as milder in their action than the arsenites. There is some doubt whether the arsenic acid becomes changed in the system, for in an instance in which the arseniate of soda was given for several days, Dr. Stevenson could detect none of the peracid in the urine."

In obstinate cases of intermittent fever, when arsenic is often found serviceable in addition to quinine, the acid solution of arsenic, the chloride, is recommended as a convenient mode of administration.

In neuralgia, especially when the patient is anæmic, the combination of the solution of the chloride of arsenic with the tincture of iron is regarded as extremely efficacious.

IV. *Two Cases of Disease of the Supra-renal Capsules with Bronzing of the Skin.* By S. O. HABERSHON, M.D.

The cases reported in this paper are among the most interesting that we have yet seen of the diseases described some years since by Dr. Addison, and generally known by his name. The more fully the disease is known the more completely is it traced to the vaso-motor nerve, and also to the pneumo-gastric nerve, with which the supra-renal capsules have the closest anatomical relations.

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[1] *Iodure d'Arsenic* (Magendie Formulaire):—

"Le composé a été aussi mis en usage à l'hôpital Saint Louis, par M. Biett.

"Il s'obtient soit; en chaffant dans une cornue de verre un mélange d'arsenic 16 et d'iode 100, l'iodure se sublime sous la forme d'aiguilles d'un rouge orangé. Il se décompose facilement par l'eau en grande quantité.

"Soit; en faisant bouillir arsenic en poudre 30 grammes, iode 100 dans 1000 grammes d'eau, filtrant lorsque la liqueur est encoloré, et évaporant à siccite. On peut le sublimer si on le juge convenable.

"POMMADE.

"Iodure d'Arsenic	3 grs.
"Axonge	1 once.

"M. Biett a plusieurs fois employé cette pommade dans quelques cas de dartres rougeantes tuberculeuses."

[2] An interesting paper on "Iodide of Arsenic," by Dr. A. T. Thomson, is to be found in the Lancet of 1839, p 176. He used the iodide in lepra, chronic impetigo, in doses of $\frac{1}{8}$ of a grain, so also in tumours of a carcinomatous kind.

Two lithographic plates are added to this paper, one coloured to represent the appearance of the face and of the back of the hand in one of the cases, the other representing the semilunar ganglion, and its connection with the capsule, and the pneumogastric nerve with its branches to the same organ and to the stomach. The anatomical arrangements fully confirm the views now generally entertained of the pathological symptoms of Addison's disease.

V. *Clinical Report on Inflammation and Tumours of the Breast, more Particularly in Reference to their Diagnosis.* By THOMAS BRYANT.

This paper is divided into two distinct chapters, one upon Inflammation of the Breast, the other upon tumours of that organ. The most important practical points connected with the subject of inflammation of the breast are very well considered. Some of these points are brought out in the following analysis of 102 cases of abscess that were observed.

Analysis of 102 *Cases of Abscess of the Breast.*

79 instances occurred during lactation.
2 " " " pregnancy.
21 " " patients who were neither pregnant nor lactating.

Of the seventy-nine instances which were found in women who were suckling—

35	occurred during the first month	72 per cent.
22	" " second "	
3	" " third "	12 per cent.
3	" " fourth "	
None	" " fifth "	
3	" " sixth "	
1	" " seventh"	
None	" " eighth, ninth, tenth month	
And 1	during the eleventh, twelfth, thirteenth, fourteenth, and fifteenth month respectively	6 per cent.

In 7 others the month was not stated.

Nearly three-fourths of the cases, it will be noticed, occurred during the first two months of lactation. The true explanation of the cause is attributed by Mr. Bryant to the searching of the child after milk, in patients who have neither sufficient power to secrete, nor to resist the inflammatory process when once originated. The connection between a fissured condition of the nipple and abscess is not so common, in his experience, as is generally believed.

When inflammation of the breast has occurred during lactation he has always seen the patient feeble, and manifesting a want of power as a prominent symptom. In their treatment they have required soothing local applications and constitutional tonics with sedatives. Rest in the horizontal posture affords striking comfort, and when it can be carried out is of great practical advantage. In regard to opening the abscess he leaves the parts alone until pointing has taken place, and then punctures, making the incision in a line radiating from the nipple.

In the treatment of sinuses in the breast the introduction of a drainage tube of perforated India-rubber is a simple and valuable practice.

In the chapters on tumours of the breast, the symptoms that characterize the simple and the malignant tumours are pointed out, and the pathological points that elucidate the practical consideration of the subject are dwelt upon.

Of 54 cases of simple tumour or adenocele:—

17 commenced between 15 and 20 years of age.
14 " " 21 " 30 " "
11 " " 31 " 40 " "
10 " " 41 " 50 " "
2 " " 51 " 60 " "

The adenoceles then make their appearance, as a rule, during the period of life at which the procreative organs are the most active.

Of 222 cases of carcinoma, the age when the disease first appeared was as follows:—

Under 20 years of age there was no instance.

From	21 to 30	there were	17	cases,	or	7	per cent.
"	31 to 40	"	68	"	"	30	"
"	41 to 50	"	78	"	"	35	"
"	51 to 60	"	42	"	"	19	"
"	61 to 70	"	17	"	"	7	"

The majority of the cases, then, of cancer appeared during the period of life which has been denominated that of functional decline of the mammary glands, that is, between the ages of thirty-three and forty-eight.

The proportions showing the influence of marriage are very similar to those published by Mr. Sibley and by Mr. Paget.

169	cases	occurred in the	married,	or	76	per cent.
48	"	"	single,	"	21	"
5	"	"	widow,	"	2	"

In 22 out of the 222 cases, or in 10 per cent., some distinct history of the presence of a cancer in some member of the family was obtained.

On the subject of the recurrence of the disease after operation there is no satisfactory information, and the same is true as to the influence of age upon the operation, and the influence of the operation upon the duration of life.

The last chapter in this paper of Mr. Bryant, which is upon the clinical examination and diagnosis of tumours of the breast, and the operation for their removal is an admirable one. Its length and the importance of the subject forbid our undertaking its analysis; and we can only call attention to it as eminently worthy of attentive study.

VI. *The Stereoscope, and Stereoscopic Results.* By JOSEPH TOWNE. Section V.

In previous sections Mr. Towne has adduced a series of experiments, in proof of the existence of a necessary physiological connection, between those tracts of the retina which in ordinary vision received similar impressions. In the present section his inquiries are pursued still further, with a view of ascertaining whether the same perfect reciprocity of action can be shown to exist between very minute portions of reciprocating parts of the retina.

Those interested in the explanation of the phenomena of vision will find in this paper some very strong reasons for the belief that an object is seen single with two eyes, because corresponding points of the two pictures fall on corresponding points of the two retinæ; in other words, that it is by physical, and not by psychical agency that the phenomena of vision are to be explained.

These observations of Mr. Towne are illustrated by a coloured plate.

VII. *A Case of Intestinal Obstruction, or Modified Obturator Hernia.* By J. COOPER FORSTER. Arranged from a report by Mr. Henry Brietzcke.

The case recorded in this paper is one of great interest from its connection with the disputed question of the propriety of making an explanatory incision into the abdomen, in cases of internal strangulation.

A woman, thirty-eight years of age, one morning just after the bowels had acted, was seized with sudden and aggravated vomiting, with pain and constipation, and a peculiar constriction across the scrobiculus cordis. Other measures for her relief being ineffectual, and the vomiting becoming stercoraceous, the parts concerned in hernia at the left inguinal ring were cut open and exposed, but no evidence of rupture was found. The patient died two hours afterwards.

At the *post-mortem* examination it seemed that a small obturator hernia had existed for some time; that after the strain of an evacuation had passed off, the bowel had been reduced by the action of the obturator externus, that muscle being put on the stretch, owing to the position of the thighs; instead, however, of going into the abdomen it had slipped under the peritoneum, between it and the pelvic fascia, and then was strangulated.

A practice was adopted, during the treatment of this case, that demands notice. The patient was placed in a warm bath and a cold douche was applied to the abdomen. In this case the practice was not followed by a good result; but Mr. Forster refers to two others of obstinate constipation, where, when all other remedies had failed, this procedure was immediately followed by marked success.

This case of intestinal obstruction is illustrated by a plate.

VIII. *Case of Aneurism seated on an Abnormal Main Artery of the Lower Limb.* By C. Hilton Fagge, M. D.

Among the abnormalities in the distribution of the arteries one of the very rarest is the occurrence of a large artery, arising from the internal iliac, running down the back of the thigh, and terminating in the popliteal, as the main artery of the lower extremity.

In the present paper a case is recorded where this abnormal artery became the seat of aneurism, that terminated fatally.

It may be remarked that a large artery in such a position, exposed to pressure during sitting, and to strain when the thigh is forcibly flexed, would be peculiarly liable to aneurism.

This case is illustrated by a plate.

IX. *A Memoir of a remarkable Case of Disease (a new growth) affecting the Shaft of the Tibia.* By John Birkett.

The striking features of the case, here related, are a fracture of the tibia, occurring in a very stout, healthy looking woman, aged 43 years, from a trivial cause, and the persistence of a painless swelling after the union of the fragments. This swelling became excessively painful, with but little change in its appearance, and an incision was made into it, dividing a dense fibrous layer, which might or might not be thickened periosteum, and exposing an opening in the tibia, within the shaft of which was a soft vascular growth, easily excised, or rather scooped out. This operation was performed some two years after the swelling had first been noticed. Three or four days after this exploration the sufferings of the patient became greatly aggravated; the growth increased, and it was necessary to remove the limb. The flap became gangrenous; constant and uncontrollable vomiting exhausted the patient; and she died on the fifth day from the amputation. From the examination of the parts, Mr. Birkett is in favour of placing the new growth in the group of fibro-plastic formations.

Two other cases of disease of the same part of the body are introduced into this memoir for the sake of comparison, making it altogether a very important contribution to our knowledge of obscure diseases of the bones.

A plate containing three figures is added to illustrate this case.

X. *Cases and Observations in Medical Jurisprudence.* By Alfred S. Taylor, M. D., F. R. S.—These cases are all exceedingly interesting. From their nature, however, they scarcely admit of an analysis, and require to be studied at length. It will be well, however, to give a list of them to show, at least, what they are, for those more especially engaged in medico-legal studies.

The first case is one of chronic poisoning by mercury (in a packer of skins), through the skin and lungs; death after four years. The second shows the rapid absorption and diffusion of mercury, even in the comparatively insoluble form of calomel; in sixteen hours the mercury from this compound was found deposited in the liver. The third is one of poisoning from forty (40) grains of turpeth mineral; intense salivation early occurred, and the patient died in eleven days. The fourth is one of poisoning by corrosive sublimate; death in seven days; no salivation; suppression of urine. The fifth is a case of poisoning by aconite, a quantity of the tincture being used. The sixth is one of poisoning by ammonia, in compound camphor liniment. The seventh is a case of poisoning by alcohol; a child seven years of age; dying in profound coma twelve hours after drinking a quantity of brandy. There are several cases of poisoning from nitrobenzole, both from swallowing it as a liquid, and from inhaling the vapour: and one from the vapour of aniline, which resembles nitro-benzole, in its toxicological effects, as a narcotic poison.

The paper closes with an account of the process for detecting chloroform in the blood.

XI. *Select Cases of Aneurism.* By EDWARD COCK.—These cases are six in number. In each one of them there is some extraordinary complication or some peculiar feature that renders its publication useful. Among them is one of aneurism of the right iliac artery; ligature of the common iliac; suppuration of the sac, and perfect recovery of the patient.

XII. *Clinical Remarks on Calculous Disease.* By G. OWEN REES, M. D., F. R. S.—In this short paper Dr. Rees calls attention to the fact that some of the most looked for symptoms are not unfrequently wanting in cases of renal calculus. Neither hæmaturia, nor frequent micturition, nor pain more on one side than on the other, is always to be expected.

When calculus exists in the right kidney there is a peculiarity with regard to the seat of pain, which is very apt to deceive. The pain, in these cases, is referred to the right hypochondrium; it extends downwards toward the umbilicus, but not to the lumbar region; there is a feeling of great distension over the colon, and the bowels are constipated. These are the symptoms so often regarded as significant of the passage of biliary calculus, that an error can easily be committed if blood be not perceived in the urine.

XIII. *Case of Poisoning by Arsenic from External Application; Transference of the Poison from the Skin to the Stomach.* By ALFRED S. TAYLOR, M. D. —This paper gives an account of a child nine years of age, who died after the application to the scalp of an ointment containing arsenic and white precipitate. The facts remarked upon by Dr. Taylor, and the reasoning by which he is led to the conclusion that the child died from arsenic externally applied, are highly interesting and instructive.

XIV. *On the Glandular Nature of Proliferous Disease of the Ovary, with Remarks on Proliferous Cysts.* By J. BRAXTON HICKS, M. D., London, &c.—Proliferous cyst-growth, so called, of the mammary gland has been proved to be really not cyst-growth, but gland-growth. The paper of Dr. Hicks is to prove the same to be true of similar growths of the ovary. It is illustrated by three plates representing the anatomical structure and elements of these cysts.

XV. *Death from Rupture of the Uterus. Inversion of the Uterus and Expulsion of the Child by Gaseous Putrefaction.* By ALFRED S. TAYLOR, M. D. —The case reported in this paper is a very singular one. A woman, thirty-seven years of age, died undelivered while in labour of her seventh child, after a severe and long pain, and the woman became very weak and delirious, and died in about half an hour. About a week after death and the interment of the body, it was exhumed and the following appearances were found.

"The body was well nourished, there was a good deal of decomposition, and from that cause the abdomen was much distended. The dead and decomposed body of a male child, which had arrived at its full time, was lying between the thighs of the deceased; the head was towards the feet of the mother, and the feet underneath the uterus, which was inverted, and, with the placenta attached to it, was lying also between the thighs. The umbilical cord was not divided. On opening the abdomen a good deal of gas escaped; there were about four pints of blood effused in the cavity of the peritoneum; the hand could be passed between the bladder and rectum into a pouch which extended between the thighs. Towards the rectum there was found an opening. On replacing the uterus, which was not contracted, there was observed a rent through it and the peritoneum. The rupture of the uterus was at its posterior part a little above the cervix; it was transverse and about six inches long."

It would appear that in this case a rupture of the uterus and consequent hemorrhage had destroyed the life of the woman. The body of the child had been brought down very low by the prolonged pain, and did not recede so as to escape into the cavity of the abdomen through the rupture. When decomposition took place, the pressure of the gas arising therefrom had expelled the child and produced inversion of the womb.

There are probably many medical practitioners, who, from not having before heard of cases such as the one here related would not hesitate to deny the possibility of their occurrence. The discovery after death of a dead child between the legs of the female, with the uterus lacerated and inverted, the placenta and umbilical cord lying near, and a large effusion of blood in the abdomen would place the person in attendance in great peril, unless the facts are known and can be deposed to by eye-witnesses.

XVI. *Cases of Inguinal Hernia, Depending upon Abnormal Conditions of the Vaginal Process of the Peritoneum.* By JOHN BIRKETT.—A number of cases are grouped together in this paper, from which many valuable practical hints may be learned, useful in the diagnostication and treatment of sometimes very obscure cases. They demonstrate, moreover, the varieties of inguinal hernia, the anatomical characteristics of each, and the periods of life at which they are most commonly developed. The details show also the dangers to which persons are liable in whom these varieties of hernia are developed, as well as the difficulties that are encountered in their treatment.

The cases, thirty-five in number, are arranged in the following order :—

"I, A.—Those in which the vaginal process of the peritoneum remained open along its whole extent.

"I, B.—Those where a constriction of the vaginal process of the peritoneum constituted an impediment to the reduction of the hernia, and was the cause of its strangulation.

"II.—Cases of hernia associated with malposition of the testicle.

"III.—Those depending upon an open state of the funicular division of the vaginal process of the peritoneum.

"IV.—The cases in which the canal of the vaginal process of the peritoneum remains unobliterated, whilst its ventral orifice is closed, and a hernia pushes its sac before it along the open tube."

The paper is a most valuable contribution to aid in the formation of a correct diagnosis in this kind of hernia. A recapitulation of all the facts contained therein bearing upon this point is not, however, in the scope of this notice. As respects the treatment, what they teach most forcibly is the risk to life which attends the condition of the bowel termed strangulation. To avoid the necessity of a cutting operation would always be the great object of a surgeon, and this can only be done by carefully refraining from the employment of force in the application of the taxis, and by administering those medicines which induce repose or sleep, relaxation of the tissues, and complete muscular relaxation.

A plate accompanies this paper for its illustration.

XVII. *On the So-called Amyloid Degeneration.* By F. W. PARRY, M. D., F. R. S.—In this paper Dr. Parry seems to us to have completely disproved the doctrine of Virchow that lardaceous degeneration is amyloid degeneration. This doctrine is founded entirely upon the ground of its coloration with iodine, no other feature of resemblance has ever been brought forward to support its identity with the true amyloid carbo-hydrate. This coloration, in Dr. Parry's showing, depends upon a simple absorption of the reagent. From the evidence adduced in this paper it is to be believed that the lardaceous deposit is a nitrogenized material.

XVIII. In this paper, by JAMES HINTON, are reported two cases of chronic impairment of hearing improved after scarlet fever, and erysipelatous sore throat, from, most probably, a desquamation or some deeper structural change taking place in the tympanic mucous membrane, and this change restoring the impaired mobility of the structures involved in that cavity; also a case of deafness and the dissection of the ear where the defects seemed to be caused by the condition of the stapes—its diminished mobility, and especially the abnormal action of the stapedius muscle.

XIX. *On Certain Abnormal Conditions of the Bones.* By ARTHUR E. DURHAM.—This paper, which is one of considerable length, is devoted to the discussion of some points in connection with those remarkable affections of the bones which are called respectively (and not inappropriately) mollities ossium or osteo-malacia, and osteo porosis, especially that form of the latter, which, when affecting the head, has sometimes been designated hyperostosis cranii. It contains in addition the details of several interesting cases not yet published.

It will be found particularly valuable from the completeness of the clinical and microscopical investigations into the condition of the bones affected by softening. It is well illustrated by four plates containing numerous figures.

This volume of the Guy's Hospital Reports closes with an index to the third series, including the first ten volumes (1858—1864). It is a most valuable contribution, by the editor, and closes probably another series of what all interested in the art and science of medicine, regard with increasing thankfulness and admiration. W. F. A.

ART. XXIV.—*The Successful Treatment of Internal Aneurism, illustrated by Cases in Hospital and Private Practice.* By JOLLIFFE TUFNELL, F. R. C. S. I., M. R. I. A., &c. &c. London: Churchill & Co. Dublin: Fannin & Co. 1864. 8vo. pp. 34.

THE most valuable contributions to our knowledge of the pathology of aneurisms and their best method of treatment, for many years past, have been from Irish surgeons. This is to be attributed probably to the frequency of this affection in Ireland, where, owing to the diet, habits, and moral peculiarities of the inhabitants, the coats of the arterial bloodvessels often undergo degeneration and consequent dilatation.

In the present pamphlet are recorded five cases of aneurism of the aorta in the thoracic and abdominal regions perfectly relieved by medical treatment. The method adopted by Mr. Tufnell is a modification of that advised by Valsalva. Valsalva kept his patient in bed, perfectly quiet, on a diet that was truly frightful, and submitted him to frequent bloodlettings. The quantity of nourishment was daily diminished until but about a half pound of boiled meat was given in the morning, and rather less in the evening. This was continued until the patient could scarcely raise up his head, when the quantity of nourishment was gradually increased. The object of this treatment was to diminish the distensile action of the heart, by which the sac of the aneurism was thinned and destroyed, and to allow of the formation in the sac of those fibrinous clots by which, as we know, its cure is effected.

Frequently repeated venesection, however, defibrinizes the blood, and must, therefore, render it less fitted to deposit these layers of fibrin. On this account this part of Valsalva's method has been generally condemned, and other means have been advised for diminishing the quantity of the circulating fluid and the force and frequency of the arterial pulsations. It has been found also that the diet enforced by Valsalva, while it had the good effect of diminishing the quantity of the blood, acted injuriously by rendering it too thin and watery. The object to be sought is, while diminishing the quantity, to make it as rich as possible in solid constituents.

The means of modifying the circulation so as to rob it of its noxious characters, and to convert it into the medium of cure, by scientifically and systematically applying rest, regimen, and remedial agents, are most admirably set forth in this pamphlet.

As to the rest and regimen, we think it well to give Mr. Tufnell's directions in his own words. He says:—

"The recumbent position is the main point to be attended to. If this cannot be steadily maintained for a considerable length of time, all other treatment will fail. In the horizontal posture the circulation is tranquillized, and the heart's action becomes regular and slow. Recumbence places that check upon the circulation in internal aneurism, which, in external, can be mechanically produced. How, it may be asked, is this effected? Reference to the last case detailed will explain. This patient, upon admission, had a quick, full, and jerking pulse, beating 104 times per minute. After a few days it fell to 96, but, when standing and in ordinary exercise, it never reduced below. Placed lying horizontally, however, for thirty or forty minutes, the pulse fell to 66. Now, working this out arithmetically, we find the result to be as follows:—

The pulse when standing and in ordinary exercise	96 per minute.
The pulse after lying horizontally for a while .	66 "
Difference of pulse caused by position . . .	30 beats per minute.
Multiplying 30 beats by 60 minutes . . .	60
	30
Gives	1,800 beats per hour.
And multiplying 1,800 beats by 24 . . .	24
	7200
	3600
Gives no less than . .	43,200 beats per diem.

The aneurismal sac being in the one instance (irrespectively of the force of the contractions) filled by the heart in the twenty-four hours no less than forty-three thousand two hundred times oftener than in the other; or, granting that, under ordinary circumstances, the individual affected should rest in bed for twelve hours out of the twenty-four (which we know to be greatly in excess of any ordinary recumbence), it would realize twenty-one thousand six hundred times per day. What remedial agent in the pharmacopœia will, without prejudice to the constitution of the patient, produce this result? The answer is brief: there is none. Recumbence is the secret of cure, but this recumbence must be regularly and steadily maintained. I have mentioned 'a considerable length of time.' I mean by this expression two months or ten weeks, at least, and this period to be passed without the patient, if possible, sitting even once erect. In carrying out the treatment, we require, therefore, a light, cheerful, and airy room, where by day the patient shall have an opportunity of seeing what is going on; and especial care must be taken that it has a southern aspect, for nothing is more depressing to the spirits of a patient than being immured in a chamber upon which the sun never shines. The next point to be attended to is the bed. It must be of camp form, so that the bowels when acting can be easily relieved by an assistant with the pan, or (if not acting) by the administration of an enema, without disturbing the patient. Yet it must not be too narrow, as the sufferer would otherwise feel cramped and confined, and not sufficiently at ease. Upon the bedstead must be placed two hair mattresses, one upon the other, both full and elastic. Upon these (in proper site to receive the sacrum and hips) a large water cushion properly but not over filled. Upon this a double blanket sewed at the corners and sides to the lower mattress, and upon the blanket a fine linen sheet similarly attached, this being done to prevent all wrinkling in the bed and disturbance of the sheet on which the patient's legs and body lie; another linen sheet (folded as after a lithotomy operation) being laid transversely to receive the buttocks, and be drawn from beneath from time to time. Three or four good feather pillows to prop the shoulders and receive the head, together with the over-clothes, complete the bed, on which, when once comfortably settled, the individual must be content to lie without changing his position further than to turn from side to side, or occasionally round upon his face, should such movement give relief to the dorsal pain, as it sometimes will. A urinal and bedpan must be at hand, and an attendant always ready to offer such aid as the patient may require; to read to, converse with, or amuse him. The diet, under ordinary circumstances, must be confined to three meals served at regular intervals, and restricted to the following in kind and in amount,[1] viz: For breakfast, two ounces of white bread and butter, with two ounces of cocoa or milk. For dinner, three ounces of broiled or boiled meat, with three ounces of potatoes or bread, and four ounces of water or light claret. For supper, two ounces of bread and butter, and two ounces of milk or tea, making in the aggregate ten ounces of solid and eight ounces of fluid food in the twenty-four hours, *and no more*. Thirst, if present (as at first it most probably will be, especially during the summer months) must be met by holding a pebble in the mouth to favour the secretion of saliva, or, if procurable, by sucking from time to time a small portion of ice, this diminished quantity of liquid reducing the duty of the heart and relieving the action of the lungs; the effect upon the blood being at the same time to render it thicker and more fitted for deposit. Nature is thus placed in the most favourable position to work out a cure, and we may in some few cases leave her to perform it without further aid."

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[1] "In some irritable constitutions this restriction in diet will be irksome, and the patient become intolerant and restless. Here, instead of attempting to persist in the withholding of food, the appetite should be indulged *to the satisfying of the patient* (so as to keep him tranquil) *but no more.*"

In the treatment of the majority of cases it will be found necessary to have recourse to certain remedial agents, for their anodyne, aperient, or tonic effect.

As an anodyne, lactucarium is highly recommended, and when, from the presence of the aneurism, there is tracheal or bronchial irritation, hyoscyamus may be given in combination. As aperients, the compound powder of jalap, the compound colocynth pills, and the compound rhubarb and aloetic pill, are considered as sufficient to meet the requirements of almost every case. This class of remedies must be used with great discretion, as they distress the patient, hasten the circulation, and interrupt the repose so essential to cure. Straining at stool must never be permitted; and when requisite to prevent this, enemata of tepid water should be resorted to. When, in consequence of the reduction of the quantity of fluid, the urine is very limited in quantity and highly charged with salts, so as to scald the urethra in micturition, the bicarbonate of potash may be administered with great benefit.

As the principal symptom we are called upon to meet during the treatment is that of pain, we will give *in extenso* the directions laid down:—

"Here we must resort to narcotics, using them freely, both internally and externally, and to such an extent as shall dull and deaden the agony under which the patient occasionally suffers. For this purpose opium must be resorted to in its various forms, and of every preparation that which is to be preferred is the Quakers' black drop, proportioning the dose to the urgency of the case.

"If genuine black drop cannot be procured, then Batley's sedative liquor, given in combination with the tartrate of antimony, may be usefully employed in such proportions as the following, viz: Batley's sedative liquor, 25 drops; mindererus solution (Dublin Pharmacopœia), 60 drops; solution of tartarized antimony, 20 drops; mixed with one ounce of cold water. Take as a draught as required.

"In one instance the smoking of twenty grains of stramonium at bedtime was found to produce a quiet night. This was in a case where the real nature of the disease had been overlooked, and the use of stramonium had been prescribed, and its habit acquired, with a view to the relief of symptoms which were supposed to be of asthmatic origin. Its effects, however, were such as to afford considerable relief, and the result may be borne in mind for trial in cases where other narcotics fail. The use of issues, which, when inserted upon either side of the spine, give, upon their discharging in cases of thoracic and abdominal aneurism, such vast relief, can seldom be resorted to here, as their presence interferes with the recumbent position, and also necessitates the movement of the patient for their dressing.[1] Instead of these, belladonna may be employed, and a large plaster of this sedative, spread upon very soft, thick chamois leather, be applied evenly over the surface of the back, the centre of the plaster corresponding to the seat of the severest pain. With reference to issues, however (if they should be adopted in any case), it must be borne in mind that the physical and stethoscopic phenomena consequent upon internal aneurism have disappeared upon the creation of an issue, and the establishment of a free discharge. There has been also relief from pain, and an absence of the *bruit*, stridor, or dysphagia, previously existing. This has occurred more than once, and may do so again, thus creating a doubt in the mind of the practitioner as to the correctness of his diagnosis, and a disbelief that the case has been one of aneurism. Subsequent return of these symptoms, however, will dispel the illusion.

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[1] "Another mode by which relief to this pain may be afforded is to place the individual fully under the influence of chloroform, and then blister the most sensitive spot on the back with a heated iron spoon; subsequently dressing the vesicated portion with the muriate of morphia, in doses proportioned to the case."

"Relief to the dorsal pain will often be given by a change of position, such as turning round and lying upon the face: whilst occasionally the application of a heated smoothing iron, applied over folded brown paper, and laid against the painful portion of the spine, will remove for a while the boring sensation which the patient suffers.

"Camphor, ether, and black drop in combination having been tried and failed, chloroform by inhalation may be used; whilst, if nausea and vomiting set in (as will sometimes be the case), a draught containing two drops of creasote, with a grain of quinine, may be given with advantage."

One other medicine, it is added, may be used with much benefit, that is iron, in anæmic cases.

By perseveringly pursuing the course here recommended, Mr. Tufnell believes this method of treating internal aneurism will obtain as general confidence as that now yielded to the treatment of external aneurism by compression. The success that has attended upon it in his own hands is certainly most encouraging.

To us the most interesting part of this pamphlet is that in which the diagnosis of internal aneurism is discussed. In this affection, as much as in any other, perhaps, it is in the earlier stages that we can expect from treatment the fullest and happiest results, and in these stages the symptoms are so equivocal that the whole of the phenomena consequent upon the development of the disease must be well considered. The symptoms attending an internal aneurism are considered regularly and systematically, in reference to the regions affected. The head, face, neck, thorax, abdomen, and back are taken up consecutively, and then the upper and lower extremities. The symptoms by which internal aneurism may be differentially diagnosed are so carefully and fully laid down, that we will transcribe all that Mr. Tufnell says on the subject:—

"Firstly, then, as regards head symptoms, we have cerebral torpor, pain, and confusion of ideas, occasional giddiness, with consciousness sometimes all but lost. In the face, we find the conjunctiva sometimes suffused, whilst in other instances the countenance will be of a tallowy colour, more or less swollen, with the lips sometimes even livid. The veins of the neck, too, in some cases, present symptoms of tumefaction from implication of the descending cava and innominata veins, either by the aneurismal tumours being adherent to these vessels, or pressing upon them, thus narrowing the channel, and preventing the return of the venous blood to the heart. Contraction of the pupil of one or both eyes from pressure on the cervical sympathetic, as pointed out by Dr. Reid, is an additional symptom to be noted, and the evidences of which are visible, to the eye of an observer, in the eye of the patient.

"Raucous voice and aphonia, too, both become valuable aids in diagnosis. The first of these we find in cases where the aneurism presses upon the trachea at its bifurcation, the indentation in the trachea producing this alteration in the tone of the voice; whilst aphonia we learn, by the experience of *post-mortem* observation, to be dependent upon the influence exercised by the tumour in pressing upon the recurrent laryngeal nerve, the pneumogastric being sometimes spread out into a kind of cellular web where the recurrent is given off. Stridulous breathing must be regarded in its separate and special bearing. Thus, in one case the stridor will be dependent upon a cause that is above, or laryngeal; and in another, where the obstruction is tracheal, and situated below. When the breathing is stridulous only, unaccompanied by aphonia, and when dysphagia is absent, we may then conclude that the tumour lies to the right of the trachea, pressing upon it and diminishing its calibre, but not implicating the œsophagus or recurrent nerve.

"Thus, by the aid of ordinary hearing, we are enabled to form an opinion as to the causes productive of these various sounds, and to estimate at their real value the relative symptoms of stridulous breathing, form of voice, and character of cough, and from these the site and nature of the tumour. Dyspnœa, too, is a valuable sign, but it must ever be taken into consideration in connection with this fact, namely, that dyspnœa is increased in exact proportion to the relative degree of irritability of the air-passages present in each individual case.

"Thus much may we learn from the conditions of the head, neck, face, and voice.

"In the chest we have the feelings of the patient to assist us, with the adjuvants of auscultation and percussion; auscultation pointing out the relative state of the respiration upon the corresponding sides of the chest, with the absence or presence of *bruit;* and percussion demonstrating the amount of dulness, if any; which latter, when existing, with absence of respiration at the same spot, is a symptom that should always be most carefully regarded. In the chest we have, however, often a serious obstacle to contend with in the form of bronchitis of chronic character, sometimes affecting one lung, but not unfrequently both, interfering considerably with auscultation, and masking the real disease.

"With reference to *bruit de soufflet*, whilst its presence may be depending upon other causes than aneurism, its absence is no proof of the non-existence of the disease, for there is frequently no *bruit* whatever, although there may be an aneurism of large dimensions; whilst a largely dilated state of the aorta without saccular development may be productive of bellows murmur; and if, as occasionally (though rarely) happens, a ring of bone should encircle the commencement of the aorta, a sound which has been described as the trumpet *bruit*[1] will be loudly and distinctly heard.

"The form of the opening influences the kind of *bruit* much more than the size. Thus, in cases where the communication between the aorta and the aneurismal sac is very large (such as two inches in length), the *bruit* is often less distinct than where the aperture is only just sufficiently large to admit the forefinger of an adult, but perfectly circular and round. The form of *soufflet*, when it exists in connection with aneurism, may be considered then to depend upon the nature of the opening; thus a smoothly round opening is found to give a soft blowing sound, whilst a rough and irregular aperture is accompanied by a very rough *soufflet*. *Bruit*, too, may occur in connection with aneurism, yet so existing as to be mistaken for the *soufflet* depending upon valvular disease. Thus aneurism of the heart itself, emanating from the vicinity of the left auriculo-ventricular opening, and pressing forwards, may cause symptoms common to the narrowing of the left auriculo-ventricular opening, and from the far greater frequency of the latter affection, the *bruit* and *fremissement*, which are really dependent upon aneurism, may be mistaken for that of valvular disease. *Soufflet*, then, taken *per se*, is not a symptom of diagnostic value as great as when it occurs in combination with other abnormal conditions of the thoracic cavity, such as undue pulsation, dyspnœa at intervals, oppression of the præcordial region, with difficulty of swallowing solid food. These, in combination with *bruit*, point to the true nature of the disease. Of every symptom, however, there is none so peculiar to the disease as pulsation. Now, when this occurs to a considerable extent—when the pulsation of the heart is very distinct (the organ itself not being enlarged)—it may be owing to the aneurism springing from the aorta about the junction of the thoracic and abdominal portions, the aneurism projecting forward the heart itself. Again, when the pulsation is distinctly felt in the anterior and posterior surfaces of the chest at the same time, the possibility is suggested of two aneurisms coexisting. With reference to pulsation, however, it is true that pulsating cancer of the lung may be taken for aneurism of the aorta in the ascending or descending portions of its arch; but the progress of cancer is so much more rapid than that of aneurism, that in a short time its true nature will become manifest, in addition to the other general symptoms which characterize malignant disease.

"In cases of abdominal pulsation we have to consider the possibility of the tumour being other than aneurismal, and we may find tumours receiving pulsation from the aorta behind to be dependent upon various causes; thus scirrhus of the mesentery, scrofulous disease of the mesenteric glands, or collections of hardened feces in the pouches of the colon, may exist; but here, in all these cases, the absence of lateral dilatation will assist us materially in forming our diagnosis. There is one point, however, that cannot be too strongly commented upon or borne in mind, and that is, that all the stethoscopic phenomena of aneurism that accompany aneurism of aorta, such as *bruit de soufflet*, stridor, and dysphagia, do at times intermit, and, for a while, subside.

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[1] "By Dr. Corrigan."

"We cannot account for this state of things in any other way than by regarding it as the result of temporary diminution of the diastolic condition of the aneurism, and consequent diminution of pressure upon the part implicated, from reduction of the heart's action; certain it is, however, that the case is so, and we must keep the knowledge of this fact always in remembrance.

"In the abdomen we have the same variety of assistance that we bring to our aid in examining the chest, with the addition of manipulation. Here the obesity of the individual, in some cases, greatly obstructs tactile examination, and renders the task of deciding as to the nature and cause of abdominal pulsations a far different matter from what it is in a thin person; but, to a certain extent, after the employment of purgatives and temporary low diet, the use of medicines to correct flatulence, assisted by gentle friction to the abdomen, and an easy, recumbent position, with the walls of the belly rendered lax, we may, in almost every case, be permitted to make such an examination of the tumour as will enable us to draw a correct conclusion as to its nature.

"The influence of inspiration upon pulsating tumours of the abdomen[1] is of importance in forming a diagnosis; thus upon a cancerous tumour inspiration exerts its influence, whilst in aneurism of the aorta it has no effect. Should the mesenteric artery, however, happen to be the seat of this disease, then respiratory motion might affect it; but in no other aneurism would such be the result, and aneurism of the mesentery is very, very rare.

"And here it may be mentioned that, in the diagnosis of abdominal tumours, with pulsation, the rules laid down by Dr. Ablan should always be borne in mind, viz., that aneurism originates gradually, and the pulsations increase in strength by degrees, whilst other abdominal pulsations begin suddenly, and are most violent in their early stage, abating after they have lasted for some time. *Bruit*, too, in this region much more frequently accompanies aneurism than when the thoracic aorta is the seat of disease; this adjunct to diagnosis being often present when the patient is recumbent, and absent when the individual stands erect, from the difference of the tension by gravitation of the blood upon the walls of the sac obliterating the sound, or rather preventing its being produced. The stools, too, in abdominal aneurism, as if from sympathetic irritation, or a desire to expel something abnormally present, will occasionally be involuntarily discharged. The extent of the tumour in the abdomen is not always commensurate with the disease, but depends upon the nature of each special case. Thus the aorta need not be much, if at all, elevated from the spine for extreme pain, almost anguish, to be present; as, when the aneurism springs from the posterior wall of the vessel, and the cavity for the blood, though small, is formed in the bodies of the vertebræ, which have become absorbed before its pressure. This fact leads to the consideration of another most constant and valuable symptom, both in thoracic and abdominal aneurism, and that is pain; which feeling varies from the slightest aching to the intensest agony that can be conceived.

"In all cases, then, of aching pain in the back and loins (of any kind), we should examine carefully with the stethoscope; for a case of aching in the lumbar region, that might be regarded as arising from lumbago, or of fulness in the loins, with pain passing down the thigh, which might easily be mistaken for lumbar abscess, will be diagnosed at once as aneurism, should *bruit de soufflet* be heard, and thus point to the real nature of the case.

"In aneurism of the abdominal aorta pressing upon and eroding the vertebræ, in addition to the boring and burning pain which it universally produces, there is, in some cases, an aching extending from the loin to the knee, with an occasional darting pain exactly resembling sciatica; and, in other instances, numbness and want of motion in the lower extremity. In these cases it will be found that the erosion of the bodies of the vertebræ has extended to the points at which the nerves pass out from the spinal canal, and further when there is pain of intensity in degree extending down from the seat of disease in the back to the groin and along the spine; this is an indication of infiltration of the tissues behind the peritoneum, and into the psoas muscle with blood.

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[1] "As noted by Dr. Henry Kennedy."

"With reference to pain, we may, then, as a general rule, couple the amount of pain in the back, and elsewhere, with the progress of the aneurism upon the bony and nervous structures of the spine, though it is by no means necessary that the bodies of the vertebræ shall be eroded.

"For symptoms connected with the extremities we shall, in the arm, find varieties in the circulation and pulse at the wrist. It may differ as to volume or force; it may intermit where the heart is affected, or be altogether wanting. It may be absent at the wrist, in one case, from pressure upon the subclavian artery at its origin; and in another, from the cylinder of the artery being plugged by a portion of fibrin extending into it from the cavity of the aneurism. Where the artery at its origin is imbedded in the sac, this pedicle will sometimes completely fill the artery, passing into it for several inches. This implication of the trunks given off from the aorta necessarily influences the circulation through the branches below, and an absence of pulsation in the right radial artery of the wrist may lead us to infer that the innominata artery is more or less pressed upon and engaged

"Aneurism of the aorta, however, at or near its origin, may exist to a considerable extent without implicating the pulse at the wrist, which may be good and equal at either side, when the ascending portion of the aorta, between the heart and the origin of the vessel given off from the arch, is affected.

"In the lower extremities there will occasionally be absence of pulsation in the femoral and its branches, whilst pain, of sciatic character, will shoot through the limbs, occasioned by the pressure of the aneurism upon the origin of the spinal nerves; these, when present, assist in pointing out the true nature of the affection. Numbness of the fingers and toes, too (especially when exposed to cold), are further indications of the disease. Indeed, a general coldness of the whole body is also not an unfrequent attendant, arising as if from an interference with nervous influence, and the generation of animal heat."

These few pages altogether make up a publication of rare usefulness; and if the knowledge imparted therein be made the guide to practice, the author can well indulge the hope that it may be the means of saving many a valuable life.

W. F. A.

ART. XXV.—*A Monograph on Glycerin and its Uses.* By HENRY HARTSHORNE, A.M., M.D., &c. Philadelphia: J. B. Lippincott & Co., 1865. 12mo. pp. 68.

THE subject of glycerin and its chemical nature and capabilities, with its medicinal uses, is exceedingly interesting. Although referred to in the treatises upon the materia medica, and adopted as an officinal preparation by the United States Pharmacopœia, we needed just the *brochure* presented by the author above mentioned to place it permanently before the public, and we are much indebted to him for publishing his exhaustive researches with regard to its history. In presenting a short bibliological notice, we are aided by the lucid divisions which Dr. Hartshorne has adopted in discussing his theories; and first, with reference to its discovery.

Glycerin appears to have been discovered by Scheele, about the year 1779, in the residuum from the manufacture of lead plaster. It was more fully investigated, in 1811, by Chevreul and Pelouse. Gay Lussac and Chevreul patented a process for separating the fatty acids in 1825; but, as remarked by the author, glycerin was hardly known in commerce, in its pure state, until the beautiful discovery and invention of our townsman, Mr. Richard Albert Tilghman, patented in 1854. The first mode of obtaining it was by saponification, and this is the Pharmacopœia process. Mr. Tilghman's process is by the action of high steam on water under pressure. The nature of fats, as analogous to saline bodies, was recognized and established by Chevreul, in which glycerin was determined to act the part of a base, and hence the *rationale* of the processes adopted for its elimination.

The properties of the substance are well described, and, as a matter of practical importance, the quality is stated of being converted into *acrolein*, when distilled without water. This acrid, irritating product is a nuisance to the neighbourhood of soap and candle works, and has called forth loud complaints of unhealthfulness. It is described as very irritating to the "eyes, nostrils, and lungs, and having a strongly disagreeable odour like that of the wick of a candle just blown out." The tests for the purity of glycerin are minutely detailed.

One of the most important points connected with the article is the property of dissolving bodies. A full exposition of the capabilities in this way is given, with the table of Cap and Garot. The therapeutical chapter presents a full summary of the application of this preparation in the treatment of disease, which will amply repay the reader. The last chapters, including the pharmaceutical use and application to the arts, contain information which may be read with profit, affording suggestions which may be taken advantage of either in dispensing medicines or in artistic operations. We commend this little book to the profession, with the impression that, restricted as it is, it is a valuable addition to its literature. The typographical execution and ornate style of publication are extremely creditable to the publisher. J. C.

ART. XXVI.—*The Book of Prescriptions, containing* 3000 *Prescriptions, collected from the Practice of the most eminent Physicians and Surgeons, English, French, and American. Comprising, also, a compendious History of the Materia Medica. Lists of the Doses of all Officinal or Established Preparations, and an Index of Diseases and Remedies.* By HENRY BEASLEY, author of "The Druggists' Receipt Book," and "The Medical Formulary." 8vo. pp. 562. Lindsay & Blakiston. Philadelphia, 1865.

THE well-instructed and observant practitioner will find but few occasions when it will be necessary for him to consult a book of prescriptions like that of Mr. Beasley, while by the half educated and indolent such a book, we fear, will be too generally adopted as his sole guide in the administration of remedial agents. We admit that there are medical formulæ, sanctioned by the matured experience of physicians of the highest professional repute, which deserve to be remembered, being especially adapted to particular circumstances or to certain stages of disease, or to facilitate the exhibition of some remedy of a particularly offensive or nauseous flavour. Of such formulæ the author of the volume before us presents a number, culled from the works of medical writers of unquestionable authority. Many of them are distinguished by their neatness and elegance, while others are valuable from their peculiar adaptedness to fulfil important indications when properly and opportunely administered.

It is not, however, by having at hand the most approved prescriptions of "the most eminent physicians and surgeons, English, French, and American," that will render these prescriptions available in the treatment of disease. To do so they must be carefully considered with respect to their true place in the special therapeutics of the particular disease to which they are respectively adapted, so that a correct idea may be acquired of the end to be obtained by their employment, and the exact conditions under which they are to be given.

We may remark, in conclusion, that although the fact is very prominently stated, that in the collection of prescriptions before us, those of the most eminent American physicians and surgeons are included, yet upon an examination of its pages it will be found that but very few of the favourite formulæ of the practitioners of the United States are to be met with. D. F. C.

ART. XXVII.—*The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations.* By WILLIAM ACTON, M. R. C. S., late Surgeon to the Islington Dispensary, and formerly Externe to the Venereal Hospitals, Paris, Fellow of the Royal Medical and Chirurgical and Statistical Societies, etc. etc. From the last London Edition. 8vo. pp. 269.

THE reproductive function was not given to man to serve his pleasure, but to maintain and to increase the species. When used for the purpose of serving his individual pleasure, organic, moral, and religious laws are violated. The soul is polluted, the intellect weakened, and the strength and beauty of the body are degraded therefore by these violations.

Morality has a far higher origin than simple organic laws, but it is none the less remarkable to see how the transgression of its precepts always turns to the injury and, may be, the destruction of the organization.

This has never escaped observation. *Innumerabiles esse morbos miraris? Coquos numera*, cried the Roman philosopher, Seneca, in the days of Nero. "The cup kills more than the sword." The Hebrew philosopher, who had united the wisdom of Athens and of Memphis to that of Jerusalem, says: "He that sinneth in the sight of his Maker shall fall into the hands of the physician." (Ecclesiasticus, Chap. xxxviii. 15.) The wise Morgagni, after recording the tragical history of a young man found dead on her bosom by a courtesan, on her awaking, makes this reflection, that may well be quoted on this occasion: "*Sed tamem peccatorum ultor Deus non patitur semper occultari, quomodò in delicto per delictum ipsum pœnas sumat.*" (*Epist. Anat.-Med.*, xxi. 12.)

Dr. James Johnson eloquently says: "The heathen philosopher (Plato, I think) may have carried the idea too far when he traced *all* diseases of the body to the mind, '*omnia corporis mala ab animo*,' but assuredly, so far as my observation goes, and it has not been very limited, a great majority of our corporeal disorders spring from, or are aggravated by mental perturbations." (*The Economy of Health*, London, 1836, page 133.) The oldest and perhaps the best of observers declares that it is impossible to know the nature of diseases if we do not know them Εν τῷ ΑΜΕΡΕΙ κατὰ τὴν αρχὴν ἐξ ἧς διεκρίθη. (Hippocrates, *De virginum morbis*, page 355.) Reason, revelation, and experience all agree as to the intimate connection between moral evil and physical evil. "And wisely is it so ordained! If rewards and penalties for moral good and evil were postponed to a future state of existence, virtue would flag and vice would flourish in a frightful degree! . . . . What would be the case then were there no sensible, tangible, and unequivocal demonstrations of divine laws, and providential penalties during our temporal existence? The doctrine of future rewards and punishments would become a speculative philosophy, disregarded by the vulgar, and disbelieved by the learned!" (James Johnson, *op. cit.*, pp. 108–9.)

The injury to the organization that results from self-abuse, too frequent sexual intercourse, and from conjugal onanism often presents itself to the physician. By improving the general health and strength, and, above all, by teaching and enforcing moral laws, he will greatly benefit these cases. Cauterization of the urethra and similar practices have as much effect as the lowering or raising of the quicksilver in the barometer would have in changing the weather.

The present treatise contains quite a full, and, in some respects, a good account of the functions and disorders of the reproductive organs in the different periods of life, considered in their physiological, social, and moral relations. Its whole tone, however, is such that even if the motives of the author be not suspected, which may indeed readily be done (vide *Preface*), we must be offended by his manner. The subject is one that requires to be handled with extreme tact and delicacy; and the absence of these qualities is marked throughout this volume. W. F. A.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Reunion of Divided Nerves and Recovery of Function.*—The question whether, after an injury of a nerve, its two extremities may unite again by first intention, with simultaneous rapid recovery of function, has recently attracted the attention of Continental physiologists and physicians in a marked manner. Not only have hecatombs of dogs and rabbits been sacrificed on the altar of science for the purpose of settling the question, but there have been several surgical cases of unusual interest under observation which have thrown considerable light upon the point at issue. One of these cases recently occurred at Paris, under the care of M. Nélaton, and was reported in the Société de Chirurgie by M. Honel. A patient was operated upon by Nélaton for a neuroma in the course of the median nerve, and a piece of the nerve, about an inch long, had to be excised. Both extremities of the nerve were then united by metallic sutures. As early as the following day, Nélaton observed some movements of the thumb and return of sensation in those parts of the skin animated by the median nerve. On the second day after operation these phenomena were quite distinct, and a week afterwards both motion and sensation were so far re-established that there could be no longer any doubt about the nerve having been quite restored to its natural condition. Most of the members of the Société de Chirurgie declared this to be impossible. Messrs. Broca and Verneuil asserted that either the observation of the case had been faulty, or the diagnosis must have been wrong from the first. There was no case on record at all similar to the one just mentioned, and physiology, as well as observations at the bedside, plainly proved that regeneration of nerves was exceedingly slow, and protracted over months and even years.

A few days after this discussion had taken place, M. Laugier related an analogous case which had just occurred in his wards in the Hôtel Dieu, at a meeting of the Academy of Sciences. The case was one of injury to the forearm, both the radial and ulnar arteries, the palmaris longus et brevis muscles, some bundles of the flexor sublimis and the median nerve being torn asunder in a transverse direction. When the patient was brought into the Hospital, hemorrhage was so considerable that the house-surgeon at once tied both arteries, and united the flaps of the skin by sutures. When M. Laugier saw the patient sensation was entirely gone in the whole extent of surface animated by the median nerve, viz., the palmar surface of the thumb, first and second fingers, and the radial side of the third finger; and partly gone in the skin animated by the radial nerve, viz., the index and the inferior part of the dorsal surface of the second finger; only two-thirds of the transverse diameter of the radial nerve having been torn asunder, opposition of the thumb was impossible. M. Laugier thereupon reopened the wound, and found the lower end of the median nerve free just above the annular ligament; the upper end was not visible, and for the purpose of finding it, he incised the flap to the length of about three inches, and after section of the flexor sublimis muscle, the upper end of the median nerve came to light. Laugier now united both ends of the nerve by a silk suture. The pain and fever after this operation were not more severe than they might have been after the original injury. On the evening of the same day sensibility appeared to a certain extent restored, but it was still very obtuse. The next day, however, it was much more distinct, although there was still some difference in the parts animated by the median and ulnar nerves respectively. Opposition of the thumb was easy. On the second and third days the patient was not yet able to feel pain or to distinguish heat from cold. On the fourth day the sensation of temperature had returned. M. Laugier was of opinion that the rapidity of recovery of nervous function in this case, when compared with the experiments made on animals, was partly due to a different operative proceeding, and partly to the perfect immobility of his patient; and he drew the following conclusions from the case:—

1. If after the section of a nerve, its two ends are united by suture, sensation and motion of the parts animated by the nerve may to a great extent be restored within a few hours.
2. The recovery of function is altogether rapid.
3. It is successive—that is, tactile sensation and motion return before the sensation of pain and temperature.
4. The nerve-suture causes neither particular pain nor other symptoms of a severe nature.
5. It therefore appears necessary to receive the suture of large nerves as a legitimate surgical operation.

This first report was followed by a second, made thirty-six days after the operation, and which is to the following effect: On the twelfth day the ligature came away, and symptoms of severe neuritis set in, viz., lancinating pains in the thumb, first, and second finger. At the same time, there was numbness in these fingers, and considerable decrease of the sensibility previously regained. The symptoms of neuritis disappeared after five or six days, and there was then gradual recovery of sensibility, although at the time of the report this was still in a somewhat unsatisfactory condition. The Academy has charged a committee, consisting of MM. Flourens, Andral, Velpeau, and Bernard, with the examination of the patient in question; and this is so much the more to be commended as the account M. Laugier has given is in several respects very loose, and his examination does not seem to have been made with that degree of caution which ought to be employed under such circumstances.

The most recent physiological experiments on this subject have been undertaken by Drs. Eulenburg and Landois, of Greifswald, who operated on all kinds of nerves—viz., motor, sentient, vaso-motor, and inhibitory—in dogs and rabbits. The general results at which these gentlemen have arrived are as follows: If nerves are divided and afterwards united by suture, there is no tendency to healing by first intention, even if the coaptation of the ends has been most careful and aided by immobility of the limb, ect. On the contrary, there are invariably signs of interrupted conduction at the locality of the suture and lost function of the peripheral end of the nerve; that is, we observe loss of motion and of electric contractility of the muscles if motor nerves have been divided and reunited. In the case of sentient nerves there is loss of sensation; in that of vaso-motor nerves there is increase of temperature, profound disturbance of nutrition, and even gangrene; and in inhibitory nerves, loss of inhibitory influence. All these symptoms remain unchanged within the next days and weeks. The microscopical examination shows the same results, there being within the first few days after the operation fatty degeneration of the peripheral end of the nerve, just as after section without subsequent union. On the other hand, the fibres of the central end remain comparatively unchanged. The cylinder axis takes part in the degeneration. It is true that, on adding collodium, it becomes visible at the peripheral end, but its width is very unequal, and occasionally it is quite interrupted; while such changes have never been observed in the central end. The operation of nerve-suture causes, in many cases, a more or less extensive neuritis and peri-neuritis, which may even give rise to suppuration and metastatic abscesses in the lungs, and it is, therefore, by no means devoid of danger. It thus appears that M. Laugier's proposal of adopting nerve-suture as a legitimate operation ought to be rejected—an opinion in which most surgeons will probably coincide.—*Med. Times and Gaz.*, Jan. 21, 1865.

2. *Urochrome; the Colouring matter of Urine.*—Dr. J. L. W. Thudichum, in an essay which obtained the Hastings Medal of the British Medical Association, gives an account of his interesting researches relative to the colouring matter of the urine. He presents the following summary of his results:—

1. The colouring matter of the urine, to which the name of urochrome is given, is one of the most interesting compounds in the list of organic and physiological substances.

2. It can be isolated in a pure state; and then is yellow, easily soluble in water, less so in ether, and least in alcohol.

3. When its quantity [in equal bulks of solution] is increased, its colour still remains purely yellow. Consequently the hypothesis of Vogel, that the urine of healthy and sick persons becomes darker in proportion to the increase of colouring matter, is fallacious.

4. Under various processes of decomposition, urochrome yields a red resin, consisting mainly of uropittine [having the elementary composition $C^8H^{10}N^2O^6$, and of omicholic acid, mixed with small quantities of undetermined matters], black matter, uromelanine [having the elementary composition $C^{12}H^7NO^4$], and other products.

5. By a simple process, probably of oxidation, urochrome passes into a red colouring matter, urerythrine, which [sometimes] colours red the urine of disease, and any deposits of urates contained in it. Frequently, this oxidation is only effected after emission. The red colour may also be due to omicholic acid, which is a little soluble in ammoniacal salts.

6. The fetor of decomposed acid or alkaline urine is due to the uropittine and omicholic acid, and substances derived from them. It may be increased by, but is not primarily due to, carbonate of ammonia.

7. The urine of man contains an essential oil, which is volatile; has a strong peculiar odour; a curious reaction with iron chloride; and yields a diagnostic pink reaction with nitrate of mercury on boiling.[1]

8. Human urine also contains cresylic alcohol, which is obtained, along with urochrome, by one of the processes for its isolation.

9. One of the principal features of uræmia is the retention in the blood of urochrome. It is there decomposed, and yields uropittine and omicholic acid, which, circulating in the blood, vitiate all tissues, can be found in the crusts on the teeth, and their smell can be perceived in the breath and the perspiration.

10. When colouring matter is retained, the typhoid symptoms of uræmia are prominent. The treatment with acids, under those circumstances, has to be set aside, as promoting the retention of the poisonous uropittine and omicholic acid, and a treatment with alkalies has to be substituted. The skin must be purified by washing, and repeated perspiration induced, until the effluvia do not any longer smell of uropittine.

[11. From healthy human urine, neither indican, nor uroxanthine, nor any other substance yielding by decomposition with acids indigo-red and indigo-blue, can be extracted; neither does it yield indigo-red or indigo-blue by boiling with acids.]

12. Urochrome has no immediately apparent relation to the colouring matters of the blood or the bile. It is a derivate of albuminous matter, and the most essentially characterizing ingredient of urine.—*British Med. Jour.*, Nov. 5, 1864.

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[1] This reaction is always obtained at the end of Liebig's quantitative analysis for urea, and has excited the curiosity of almost every inquirer who used that method. I have successfully used the appearance of the first trace of pink after the disappearance of all greenish-yellow colour, as the sign that all urea was precipitated and excess of mercury solution present. The soda-test always confirmed the conclusion derived from the pink colour.

MATERIA MEDICA AND PHARMACY.

3. *Antagonistic Effects of Calabar Bean and Atropia.*—Dr. KLEINWACHTER states (*Berliner Klinische Wochenschrift*, 1864) that in the ophthalmic department of the hospital at Prague, last August, four boys, engaged in cleaning the room, drank a portion of a solution of atropia, thinking that it contained spirits. Two of the boys either spat out or vomited the fluid, and exhibited no symptoms of poisoning; but the two others, who did not vomit, were distinctly poisoned—one, however, much more so than the other. The symptoms were those of poisoning by belladonna, and consisted of delirium, dilatation of the pupils, feeble pulse, and in one there was coma. alternating with furious delirium. Both the patients were taken to bed. one of them being restrained in a strait-jacket, and cold lotions were placed on their heads. Dr. Kleinwächter happened accidentally to have with him a solution of the Calabar bean extract in glycerine, and, by way of experiment, he gave to the patient who was most affected 10 drops of the solution (6 grains of extract to 1 drachm of glycerine), which in about a quarter of an hour produced violent vomiting. The pulse became stronger and quicker, rose to 75 and then to 80 in the minute, the temperature of the body fell, the delirium abated, the patient became more quiet, consciousness returned, urine was passed with some pain in the urethra, and the pupils became somewhat contracted. In the case of the other patient, who was less affected, some of the extract of Calabar bean was dropped into the eye, but without any good effect, for on the next day the symptoms were almost unchanged, while the patient who had taken the solution of the Calabar bean internally had almost completely recovered. The rapid and striking improvement in one of these cases appears manifestly to be attributable to the administration of the Calabar bean extract, for the patient who was not treated in the same manner showed no improvement for forty-eight hours.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865.

4. *Opium and its Alkaloids, and their Therapeutical Effects.*—Two papers have lately been presented to the Imperial Academy of Sciences, one by Prof. CLAUDE BERNARD, the other by Dr. OZANAM. Both authors agree in thinking that the physiological effects of the alkaloids contained in opium are not identical, but they do not each arrive at the same conclusion as to what the effects really are.

Prof. Bernard infers from his experiments on the lower animals, that of the six principles of opium—namely, morphia, narceia, codeia, narcotina, papaverina, and thebaina—only the first three possess the property of inducing sleep, the last three being destitute of that property, and probably serving to modify or counteract the soporific effects of the others. But although morphia. narceia, and codeia are narcotics, their effects are not identical, for each causes sleep in a peculiar manner. Prof. Bernard describes at considerable length the differences observed in his experiments on the lower animals between the effects of morphia. codeia, and narceia. Codeia blunts the sensibility much less than morphia, and does not make the nerves sluggish; narceia produces a kind of sleep which resembles that caused both by morphia and codeia, but at the same time is different from that of either. Narceia is the most narcotic of the alkaloids, but the sleep it produces is characterized by great tranquillity and incapability of being aroused by noise. Prof. Bernard concludes that there are three principal properties in the alkaloids of opium—namely, soporific, stimulating, and poisonous. With regard to narcotic powers, narceia stands first, morphia second, and codeia third. The three other principles—thebaina, papaverina, and narcotina—do not possess soporific properties. In the order of stimulants, the constituents of opium stand as follows: thebaina, papaverina, narcotina, codeia, morphia, narceia. As poisons, they stand in the following order: thebaina, codeia, papaverina, narceia, morphia, narcotina. Prof. Bernard concludes by observing that as in opium the same plant yields products which have very different actions on the animal economy, we ought no longer to believe that plants of the same family ought necessarily to possess the same physiological properties.

M. Ozanam arrives at different conclusions from those of Prof. Bernard, and investigates the subject from a therapeutical point of view, as he has been engaged in doing for the last ten years. He describes six principal alkaloids in opium—namely, morphia, codeia, narcotina, opianine, narceia, and thebaina. Morphia is so well known that he says little of its effects. The therapeutical properties of opianine are but little known. Codeia is sometimes an excitant, sometimes a sedative, and sometimes it stupefies, according to the dose. Narcotina has a well-marked stimulant action, and produces an effect the reverse of that of morphia. Thebaina is an excitant of the cervical part of the spinal cord. Narceia is a valuable sedative, and appears to have a special action on the lumbar portion of the spinal cord. Thus opium is both a sedative and a stimulant; the morphia, the opianine, and the narceia are sedative; the narcotina and the thebaine are stimulant, and codeia stands between the two, partaking of both properties according to the dose.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865.

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5. *Hypnotic Properties of Bromide of Potassium.*—Dr. Debout relates (*Bull. Gén. de Thérap.*, Aug. 15, 1864) several cases in which great irritability was relieved by means of the bromide of potassium. In one case there was a stricture of the urethra which resisted the treatment by dilatation, because the irritability and febrile excitement were so great as to prohibit the introduction of the catheter with sufficient frequency and regularity. Dr. Debout was therefore induced to employ the bromide, in order, if possible, to cause anæsthesia of the urethral canal, so as to make it insensible to the injurious effects of the catheters. The salt was given in large doses, four grammes (about ʒj) being taken every day. The success of the treatment exceeded all expectation, for as soon as the bromide had been taken, the catheters could be introduced, of greater and greater dimensions, without producing any bad symptoms. The most remarkable circumstance in the case was the stupefying action produced by the bromide, for although the patient had been unable to sleep for a month previous to the treatment, yet as soon as it was administered, and when he had taken only about half a drachm of the salt, he slept all night. Another case was one of neuralgia of the neck of the bladder, preventing the patient, who was a medical man, from riding on horseback and visiting his patients, the nature of the roads preventing him from walking. After a month's trial he lost the painful sensations of which he complained, and resumed his usual avocations; he stated also that he had proved the hypnotic properties of the bromide. In another case the bromide was used to allay an erethism of the pharynx and the neck of the bladder, and the patient was obliged to leave it off, because fifteen grains dissolved in water not only procured him sound sleep during the night, but on the next day he remained in such a state of somnolence as to be unable to attend to his business.

A writer in the *Union Médicale* (Oct. 13, 1864) denies that the bromide of potassium is a true hypnotic, but considers that it causes sleep by the deep sedative effect it produces upon the whole of the nervous system, and secondarily on the circulation. Phthisical patients, tormented by coughing and sweating, notwithstanding the use of opium, have obtained sleep by the means alluded to; and in two cases of organic disease of the heart, with rapidity and intermission of the pulse, præcordial anxiety and dyspnœa, M. Gubler was able, by means of the bromide, to reduce the pulse from 108 to 76, and to relieve the dyspnœa.

The properties of this salt may be summed up by stating that it is a simple moderator of nervous excitement, and that its elective action is specially exerted on the internal integument, the mucous membrane of the isthmus of the throat, that of the pharynx, and that of the genital passages. M. Vigoroux considers it the remedy *par excellence* for the nervous complaints which are so common in large cities, and the cause of which appears to him to be the excess of vascularity of a part of the nervous centres. The bromide, by diminishing the vascularity, becomes the antidote to this condition. Its presence in certain mineral springs explains their sedative action, and these springs may be usefully employed now that the cause of their action is known. Its operation appears to be antagonistic to that of iodine, with which it ought not, therefore, to be therapeutically associated, unless it is intended to counteract the effects of the latter.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865.

6. *On the Action of the Tincture of Perchloride of Iron in the Cure of Renal and Urinary Affections.*—Dr. ARTHUR HILL HASSALL relates (*Lancet*, Dec. 31, 1864) some very interesting observations on this subject. "There are few remedies," he observes, "more frequently prescribed in the treatment of renal and urinary affections than is the tincture of perchloride of iron, formerly called muriated tincture of iron. The value of that remedy in a variety of such cases is undoubted, as in the albuminuria of Bright's disease, in hemorrhage from the kidney, bladder, or urethra, in spasmodic stricture, &c.

"The tincture of the perchloride of iron consists of two atoms of iron in combination with three of chlorine, dissolved in water to which rectified spirit has been added; and it possesses the properties of an astringent, tonic, and styptic, coagulating blood or albumen with which it is brought into contact, and constringing the vessels and tissues to which it is applied.

"Now, this astringent property is just that which a remedy ought to possess to be useful in the cases above referred to, and by it, it is usually supposed, it exerts its beneficial action; and certainly nothing would appear to be more plausible and more natural than this explanation.

"Having, after the administration of this remedy, repeatedly tested the urine for the purpose of detecting in it the presence of iron, and having failed to discover the faintest trace of the metal, I was led to doubt the correctness of this view, and was induced to institute some experiments, in order to put the matter to the proof.

"To a patient, T. L——, labouring under an habitual urinary discharge, I administered for the period of more than a week a drachm of the tincture thrice daily: but, although I tested the urine on several occasions, in no instance could I detect the smallest trace of iron, notwithstanding that a pint of the urine was evaporated to a small bulk before being examined.

To a patient now in the Royal Free Hospital, Charles S——, who is suffering from an extravasation of blood, three drachms of the tincture were administered on two consecutive days. The whole of the urine passed in the twenty-four hours of each day was collected, a pint of each sample evaporated to a small bulk, and tested as before, but with a similar negative result.

"Lastly, I myself took in the course of a day three drachms of the tincture; the urine passed in the twenty-four hours being collected and analyzed, not only on the day on which the medicine was taken, but on the preceding and succeeding days. Still no iron was found.

"I could enumerate several other instances in which iron had been taken and the urine analyzed without even traces of the metal being subsequently discovered. The examples, however, I have quoted are sufficient to show that the tincture of perchloride of iron does not produce its beneficial effects, as generally supposed, in restraining the amount of albumen or of blood discharged from the kidney or other portion of the genito-urinary mucous track by coming in contact with the seat of the lesion and by its action as an astringent.

"How, then, does this remedy act? That much of the iron contained in the sesquichloride does not find its way into the circulation at all, but escapes from the system with the undigested portions of the food, is certain; the black discoloration of the feces under the use of this tincture, and indeed, I believe, under all the preparations of iron, is well known, the colour being due to a combination of the iron with a portion of the sulphur of the food—sulphuret of iron being thus formed. It might therefore be very plausibly presumed that while the greater part of the iron is thus thrown off by the bowels without having been absorbed at all, the hydrochloric acid, being set free, enters the circulation, is eliminated by the kidneys, and so comes in contact with the seat of lesion; and that it is to the acid, and not to the iron, that the benefit is to be attributed. But if this view be correct, it is capable of being substantiated by experiment; and with this object I administered to two persons drachm doses, repeated thrice daily, of the perchloride; the urine of the twenty-four hours being collected and analyzed before, during, and after the administration of the ferruginous preparation. The results will be seen in the following tables:—

C. S——.

	Nov. 26th. Before.	27th. Before.	28th. During.	29th. During.
Quantity . . .	62½ oz.	70½ oz.	49 oz.	46 oz.
Acidity	30·35	30·18	33 gr.	30·14
Chlorine . . .	115·0	137·0	90·0	140·0

A. H——.

	Nov. 17th. Before.	18th. During.	19th. After.	20th. After.
Quantity . . .	56 oz.	57 oz.	33 oz.	53 oz.
Reaction . .	Faintly alkaline.	Faintly alkaline.	Faintly alkaline.	Faintly alkaline.
Chlorine . . .	95·0	84·57	76·0	44·98

"The above figures show, 1st, that there was no increase in the acidity of the urine consequent upon taking the remedy; 2d, that there was no increase of chlorine, and that therefore the hydrochloric acid of the perchloride was not eliminated by the kidneys either in the free or combined state: thus proving that the second view mentioned of the action of the remedy is also entirely unfounded.

"These results are not a little remarkable; and we have, therefore, still to inquire, in what way does this medicine act in the cure of disease? Its effects are too rapid to allow it to be supposed that its operation is due to its influence in improving the condition of the blood by its action on the red corpuscles. We appear, therefore, driven to the conclusion that the perchloride of iron acts by its stimulating influence on the nervous system.

"These observations are interesting, not alone as concerns this one preparation of iron; they also probably apply more or less to most of the other medicinal preparations of that metal, since it is at least certain that by far the greater part of the iron contained in them is not absorbed but escapes from the system by the bowels like that of the perchloride.

"The particulars herein recorded are suggestive of further experiments calculated to throw additional light upon the subject, and which hereafter I may have the opportunity of instituting."

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

7. *Treatment of Pneumonia by Restoratives.*—An effort being made to restore the practice of bleeding in pneumonia, which Dr. J. H. Bennett considers dangerous, he gives (*Lancet*, Feb. 25, 1865) the following results of his experience regarding that disease in the Royal Infirmary of Edinburgh.

"Between the 1st of October, 1848, and the 31st of January, 1865, I have been on active duty in the Royal Infirmary seventy-five months, or a computed period of six years and a quarter. During this period I have treated 129 cases of acute pneumonia. Of these, 105 were uncomplicated, and all recovered, although many of them were very severe, involving the whole of one lung in 15, and portions of both lungs in 26 cases. Amongst the 24 complicated cases were 4 deaths: 2 from supervening meningitis, 1 from chronic Bright's disease, and 1 from extensive ulceration of the intestines. Every case has been treated publicly, and is open for inspection in the ward books; and the tabular view of the whole—commenced by Dr. Glen, my former resident physician—has been completed by the labours of Drs. Smart, Duckworth, and Macdonald, my resident physicians for 1863, 1864, and 1865. To these gentlemen I am much indebted for the pains they have taken in determining the following results, the accuracy of which is guaranteed by each of them having revised the facts in succession.

In the 4 fatal cases, death was evidently caused by complications independent of the pneumonia. To arrive at true statistics with regard to treatment, therefore, it becomes necessary to eliminate them, and to fix our attention on the 125 cases which recovered.

Sex.—Of the 125 cases, 85 were males and 40 were females.

Age.—The average age of the males was $31\frac{1}{2}$ years. The average age of the females, $28\frac{1}{2}$ years. The average age of both, $30\frac{1}{2}$ years. Between the ages of 5 and 15 years was 1 case—a girl; between 10 and 20 years 29 cases—12 females; between 20 and 30 years, 35 cases—11 females;—between 30 and 40 years, 23 cases—7 females; between 40 and 50 years, 24 cases—6 females; between 50 and 60 years, 11 cases—1 female; between 60 and 70 years, 1 case—a female; and between 70 and 80 years, 1 case—a female.

Simple or uncomplicated pneumonia.—Of the 125 cases, there were 105 simple or uncomplicated, and 20 complicated. Of the former, there were 74 males and 31 females. 79 were single and 26 double cases. Of these, I find that the clerk has omitted to state either the exact day of rigor or of convalescence in 6, so that no conclusion can be derived from them as to the duration of the disease. Of the remaining 99 cases, 73 were single and 26 double. The duration of the disease in the 73 cases of single uncomplicated pneumonia, counting from the occurrence of rigor to the commencement of convalescence, was as follows: 2 cases recovered in 5 days, 4 cases in 7 days, 5 cases in 8 days, 2 cases in 9 days, 8 cases in 10 days, 7 cases in 11 days, 7 cases in 12 days, 4 cases in 13 days, 13 cases in 14 days, 2 cases in 15 days, 3 cases in 16 days, 3 cases in 17 days, 3 cases in 18 days, 1 case in 19 days, 2 cases in 20 days, 3 cases in 21 days, 1 case in 22 days, 2 cases in 23 days, and 1 case in 26 days; the average duration, $13\frac{2}{7}$ days. The duration of the disease in the 26 cases of double uncomplicated pneumonia, counting from the occurrence of the rigor to the commencement of convalescence, was as follows: 2 cases recovered in 8 days, 1 case in 9 days, 2 cases in 10 days, 2 cases in 11 days, 1 case in 12 days, 1 case in 13 days, 4 cases in 14 days, 1 case in 15 days, 2 cases in 16 days, 2 cases in 18 days, 2 cases in 19 days, 1 case in 20 days, 3 cases in 21 days, 1 case in 27 days, and 1 case in 55 days; the average duration, $16\frac{3}{4}$ days. Of the 105 simple or uncomplicated cases, there were 9 bled by venesection and subjected to an antiphlogistic treatment before or immediately upon admission, before I saw them. The amount of blood extracted varied from 12 to 36 ounces; the latter in two bleedings. The duration of one case is not stated. Of the remaining 8 cases, the duration was as follows: 1 case recovered in 7 days, 2 cases in 14 days, 1 case in 16 days, 1 case in 17 days, 1 case in 20 days, 1 case in 27 days, and 1 case in 55 days; the average duration was $21\frac{1}{4}$ days.

The average duration of residence in hospital of the single uncomplicated cases of pneumonia—excluding 2 cases in which the date of dismission is omitted, making 77 cases—was $21\frac{2}{7}$ days: for the males (52), $18\frac{3}{5}$ days; and for the females(25), $27\frac{1}{5}$ days. Of the 26 double uncomplicated cases, the average duration of residence in hospital was $23\frac{3}{5}$ days: of the males (20), $23\frac{17}{20}$ days; of the females (6), $22\frac{2}{3}$ days. The average duration of residence in hospital of 8 cases bled by venesection early in the disease (the 9th case being excluded in consequence of the day of dismission not being entered in the case-book) was 32 days.

Complicated cases of pneumonia.—Of the 20 complicated cases of pneumonia, 16 were single and 4 double. Of the 16 single complicated cases, the duration of the disease cannot be determined in 3. Of the remaining 13, the duration was as follows:—1 case recovered in 7 days, 2 cases in 9 days, 1 case in 10 days, 1 case in 12 days, 2 cases in 14 days, 1 case in 15 days, 2 cases in 16 days, 2 cases in 19 days, and 1 case in 48 days; the average duration, 16 days. Of the 4 double cases of complicated pneumonia, 1 case recovered in 9 days, 1 case in 14 days, 1 case in 15 days, and 1 case in 18 days; the average duration, 14 days.

The extent of pulmonary tissue involved in the pneumonia was carefully determined in each case, and the average duration of the disease in the 95 single cases, deducting the unsatisfactory ones, counting from the rigor to the commencement of convalescence, was as follows: One quarter of the lung (2 cases), average duration 8½ days: one-third of the lung (12 cases), 12 days; one-half of the lung (25 cases), 15¾ days; two-thirds of the lung (34 cases) 14 days; three-fourths of the lung (6 cases), 14⅔ days; four-fifths of the lung (1 case), 12 days; the whole lung (15 cases), 10¾ days. Of these 95 cases, the right lung was affected in 58, the left lung in 37. Among these 95 cases also the pneumonia was confined to the upper lobe in 11 cases, or nearly 1 in 9 of the whole; and the average duration of the disease in these was 13 days, and their residence in the hospital 14½ days.

A careful study of the preceding facts will, I think, tend to establish some new truths and correct several prevailing errors with regard to pneumonia. I must remind those, however, who may yet be skeptical as to the value of a restorative treatment, and imagine that some of these cases might not have been pneumonia at all, that they were all diagnosed and treated publicly in the Royal Infirmary; were all examined, not only by myself, but by my intelligent clerks and assistants; and were all made the subject of clinical lectures and commentaries at the bedside. There is, therefore, the positive certainty, not only that every one of these cases was a genuine case of pneumonia, but that no other cases of the disease but what are tabulated were treated by me during the period referred to. It should be explained, however, that a few cases were partly treated by my colleagues, either before I assumed duty or after I left it, in the too frequent rotations which occur among the clinical professors in this University. Such cases are not inserted. It is also necessary to point out that two or three cases brought into the house by the police in an exhausted condition died before I saw them, and are also not inserted. It is the more important to refer to such occurrences, because they serve to account for the differences which must always exist between general hospital and clinical statistics. Every hospital physician must be aware that the general records of the house afford no index whatever to the number of cases of acute pneumonia treated clinically, comprehending as they do not only consecutive, latent, and chronic pneumonias, but not unfrequently cases of pneumonia which have entered in a dying condition and have not been treated at all.

1. The first great fact which the preceding figures serve to establish is, that a simple primary pneumonia, whether single or double, if treated by the restorative plan, is not a fatal disease. Surely 105 cases, of which 26 were double, are sufficient to establish this proposition, especially when it is considered that they were diffused over sixteen years, and occurred in all seasons. Amongst these, also, the whole of one lung was involved in no less than 15 cases, and the symptoms in many of them were exceedingly severe. Neither will any theory as to strength of constitution or change of type in disease explain the result, as several of the cases were those of healthy, vigorous young labourers, whilst others were those of weak and broken-down sempstresses. In any and every case the disease appears to go through its natural progress, so long as the body is not too much exhausted, and the physician as early as possible supports it by nutrients and restoratives.

2. As a general rule, prostration and weakening complications or remedies, not only materially lengthen the period of the disease but especially prolong the convalescence. It is easily understood, therefore, how it happened that the antiphlogistic treatment of former days proved so fatal. The facts collected for me by Dr. Thorburn, from former case-books of the Royal Infirmary, prove that in weak cases a lowering treatment was still employed, though not, perhaps, to so great an extent as in robust persons.

3. It is generally supposed that the extent of the disease and the amount of lung affected must influence the result and duration of the disease. As to the result, all my cases recovered, even the 15 cases where the whole of one lung was involved, as well as the 26 cases where portions of both lungs were affected. In one complicated case, the whole lung on the right side, and two-thirds of the lung on the left side were simultaneously affected, thus leaving only one-third of a lung to respire with; and yet, without bleeding, and with the aid of nutrients and restoratives, she was convalescent on the fourteenth day, and left the house quite well after a sixteen days' residence. With regard to duration, the extent

of the disease does not exert so much influence as is generally supposed. If only a fourth of one lung be affected, the recovery may take place in eight days; but after that, whether the half or the whole of one lung, or two-thirds of both lungs be affected, it does not appear to cause much difference. Cases with half a lung pneumonic recovered in 15, with two-thirds of a lung in 14, with a whole lung in 10, and with portions of both lungs in 14 days on the average.

4. Since the observations of Louis, it has been supposed that a pneumonia at the apex of a lung was more fatal and more prolonged than one at the base; and so it may be with an antiphlogistic treatment. But, with a restorative treatment, the preceding facts show that in 11 cases where the disease was confined to the apex, recovery took place in all, on an average, on the thirteenth day.

5. As means of palliating symptoms, and especially pain and dyspnœa, warm fomentations and poultices I believe to be the best and safest. Chloroform has been given by Varentrapp and others with good effect. No doubt also small bleedings to the extent of eight or twelve ounces, give relief; but in debilitated persons are dangerous, and in all tend, by weakening the strength at a period when the depressed system is struggling to regain its equilibrium, to prolong the convalescence and favour dangerous sequelæ. Still a small bleeding may be employed as a palliative, with caution, to relieve engorgement of the lungs and congestion of the right side of the heart, although it is very rarely required. It should be remembered, in cases of double pneumonia, that there is often great dyspnœa on the sixth or seventh day, which will generally yield to warm poultices locally, and moderate doses of wine.

6. As a curative treatment I am satisfied that the best plan is rest in bed, nutritive drinks, especially good beef-tea, from the first, assisted by port wine—from four to eight ounces—if the pulse become weak, and solid nutrients as soon as they can be taken. The elimination of the exudation may be further assisted by salines (acetate of ammonia and small doses of tartar emetic—one-sixteenth of a grain) and diuretics (nitric ether), although nature will accomplish this herself if the strength of the body be maintained. All active purgatives, contra-stimulants, depressants, anodynes, and lowering remedies of every description should be avoided.

After carefully studying all that has been written on the subject of pneumonia, as well as the numerous statistical tables of the results of various kinds of practice, I can only account for the remarkable success which has followed the restorative treatment in my hands by supposing that acute pneumonia is not a fatal disease, if the strength be supported and there be no complication. The former idea of medical practitioners, that it was a dangerous disorder, and required active depletion and antiphlogistics to prevent its passing into the suppurative or fatal stage, was erroneous, and the result of the imperfect knowledge of pathology which then existed. Suppuration, so far from being fatal, is, as we have endeavoured to show, necessary to the resolution of the disease: and a fatal result, so far from being avoided, was produced to the extent of one in every three cases. The late Dr. Todd, while he supported, also stimulated to a great extent, and the result of his practice was a mortality of one in nine cases.[1] In not one of my uncomplicated cases has there, I repeat, been a death for sixteen years, although 26 were double cases, and 15 were cases in which the whole lung was involved. Why, therefore, any such case should have died in practice of Dr. Todd I can only ascribe to unnecessary stimulation, as that seems to be the only point in which his practice differed from mine.

In an able article in the *British and Foreign Medico-Chirurgical Review* for July, 1858, it was endeavoured to be shown, from the contrary results obtained by statistics, that the result was governed by hygienic laws or peculiarities such as age, season, climate, &c. I consider that my cases prove the fallacy of such reasoning; and that, looking at the time over which they extend, as well as all the other circumstances which are adverted to, it might easily be shown that the uniform good results in my uncomplicated cases depend on some other cause. That cause, I can have no doubt, is simply supporting the patient by nutrients and restoratives from the commencement. It is the want of that support which explains the mortality in the practice of those who, while they do not actually lower their patients, fail to see that, in a certain proportion of cases, either the disease itself or excessive stimulation exhausts and proves fatal."

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[1] Clinical Lectures, by Beale, p. 310.

The facts upon which these important conclusions rest, Dr. B. states that he hopes to lay before the profession ere long in a more extended form.

8. *Expectant Treatment of Pneumonia in Children.*—M. BLACHE read, at a late meeting of the French Academy of Medicine, a report on a paper by M. BARTHEZ on this subject.

M. Blache says: "There are enlightened men who have the courage openly and boldly to advocate the principle of an expectant treatment generally in diseases. In their view, the duty of the medical man should be limited to watching over the natural progress of the disease; his art should not blindly and inopportunely interfere with nature. He should be contented with placing his patient in the most perfect hygienic conditions; and having done this, should leave him in the hands of a curative nature. They regard with sorrow those fussy practitioners, who are as busy as flies, and who never leave their patients a moment's repose, incessantly tormenting both them and themselves; forever giving orders, prescribing, bleeding, purging, etc.; in fact, men who are just like a corporal exercising recruits."

The paper of M. Barthez is founded on the observation of 212 cases of pure pneumonia observed during seven years at Hôpital Ste. Eugénie, in children of from 2 to 15 years of age. Two only of these 212 cases were fatal; and they were both cases of double pneumonia. In nearly one-half of these cases, scarcely any medicinal treatment was employed; in a large number, it was insignificant; and in about one-sixth of the whole, it may be called active. The duration of the pneumonia was between ten and fifteen days when the disease was left to itself. Under the expectant method, the convalescence occurred in from five to ten days; but was prolonged under treatment. M. Barthez concludes, with M. Legendre, that pure pneumonia in children habitually terminates favourably.—*British Medical Journal*, Dec. 24, 1864.

9. *Treatment of Chronic Disease of the Lungs by the Inhalation of Atomized Liquids.*—Dr. MORELL MACKENZIE read a paper (Feb. 14, 1865) before the Royal Medical and Chirurgical Society on this subject. The author, after an elaborate description of the various instruments invented for the purpose of introducing medicine by means of inhalation, enters into an account of the apparatus invented by Dr. Siegle,[1] of Strasbourg, and himself, which he thus describes: It consists of a little kettle with a horizontal spout, in which there is a very fine opening. Placed at right angles to the horizontal spout is a vertical tube which dips down into the kettle, with a spirit-lamp beneath it. As the steam issues from the spout it causes a vacuum in the vertical tube, and the medicated liquid rising up becomes mechanically incorporated in the steam. The dilution of the medicated liquid which takes place is very slight, as the conversion of a drachm of water into steam will take up three drachms of medicated liquid. The temperature of the steam is lowered by the incorporation of the liquid, so that at the end of the cylinder it has only a temperature of about 70°. In this apparatus there is, of course, no current of cold air. The amount of liquid taken up varies —that is, it depends on the amount of heat applied, on the height of the column of liquid, etc. This is not an important defect; but when it is thought desirable to take up a definite quantity of liquid, the author uses the following apparatus: A graduated glass tube, about eight inches high, has from its lower part a fine piece of tubing, which is bent round and up again, and then extends about an inch horizontally, and ends with a minute opening. In the vertical portion of the fine tubing there is a stopcock. The small aperture of the tube is placed at right angles to the spout of the kettle, and as the liquid emerges it becomes incorporated in the steam. By means of the stopcock the amount of liquid which passes from the tube can be regulated, so that the same amount can always be taken up in the same time. Dr. Siegle's simple apparatus is an excel-

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[1] This admirable apparatus has unfortunately been patented by Dr. Siegle.

lent one, and the author stated that he had often used it with great advantage. The author observed that his own atomizer is very simple, and can be used very easily. The liquid is driven from a fine glass pipe on to a projection in a bell-shaped tube, by the descent of a piston. The piston is drawn up without any exertion by a wheel and rack at its upper part, and is forced down by a circular spring which surrounds the cylinder. The apparatus is filled with liquid by a funnel in its top, and all the spray except that which is inhaled passes back into the apparatus. The advantages of his (Dr. Mackenzie's) atomizer are: 1. Its simplicity, requiring only a few turns of a handle to set it in operation. 2. The extremely fine state of subdivision which it effects. 3. The uniform pressure exerted. 4. The fact that the waste liquid returns into the apparatus. 5. The ease with which it can be taken to pieces and cleaned. After enumerating the physicians and physiologists who had worked at the subject on the Continent, the author analyzed the experiments which had been performed by Demarquay, Fournié, Brian, and others, on rabbits and dogs. He then related his own experiments, which had been carried out in conjunction with Dr. Duchesne, of Woodford. After detailing various experiments performed on pigs and dogs, Dr. Mackenzie thus sums up the results: Leaving Demarquay's rabbits out of the question—it having been shown by Claude Bernard that as those animals in their normal state breathe through the nares when their nostrils are covered, and they are made to breathe through the mouth, the conditions are not physiological; and by Fournié that any solution (not atomized) injected into a rabbit's mouth passes into the lungs—there are: 1. Demarquay's and Brian's experiments on dogs 2. His (Dr. Mackenzie's) on pigs and dogs. 3. An experiment performed by Demarquay, in the presence of numerous witnesses, on a woman with a tracheal fistula, in which it was shown that the inhaled liquid penetrated to the trachea, though there was a great obstruction at the upper opening of the larynx. This experiment, which had been previously unsuccessfully performed by Fournié, has since been repeated by Lieber, Schnitzler, and others, with results similar to those obtained by Demarquay. 4. The fact first shown by Bataille, and since by Moura-Bourouillon, the author, and others, that after the inhalation of a coloured atomized solution the sputa remained tinged long after the employment of the laryngoscope could detect any traces of the material used. On the one hand there were an immense number of positive proofs of the penetration of atomized liquids, on the other hand there were a few experiments performed with negative results. It was scarcely necessary to remark that any experiment might be performed—the most simple chemical test employed—in a manner to insure failure. But a few experiments of this sort could have little weight against the mass of evidence on the other side. The author stated that the greatest benefit from this system of therapeutics might be expected and had resulted in bronchitis, asthma, and hæmoptysis. He brought forward twenty-two cases treated between October, 1863, and January, 1864. There were ten cases of bronchitis, six of phthisis, two of hæmoptysis, three of asthma, and one of hooping-cough. The author did not believe that in phthisis the treatment would have a positively curative effect, but was beneficial in cutting short intercurrent bronchitis. Of the twenty-two cases detailed, only two were unable to make use of this curative process. Of the ten cases of bronchitis, eight were cured, one relieved, and one obtained no benefit. The average duration of the time required for curing these cases, though most of them were severe and of long standing, was only fifteen days and a quarter. The shortest time was six days (a severe case, No. 4); the longest forty days. The duration of treatment was not in proportion to the severity of the disease, one mild case requiring twenty-eight days to get well. Of the six patients labouring under consumption, two were unable to use the inhalations on account of the irritation which they caused. Of the remaining four cases, whilst the physical signs did not undergo any material alteration, the local symptoms (expectoration, pain, and cough) were greatly relieved. The general health was much improved in two cases, Nos. 11 and 15; slightly in a third, and not at all in a fourth. In two cases of hæmoptysis, one severe, the other slight, the atomized liquids rapidly stopped the bleeding. In three cases of asthma—one a very severe case, which had obstinately resisted the ordinary treatment—this system of therapeutics soon gave relief. In one case of hooping-cough (in an adult) the inhalations gave immediate relief, and quickly effected a cure. The author stated that during the past year he had used atomized liquids in more than eighty cases of diseases of the lungs, and that he had found the plan of treatment no less successful than was detailed in this paper. The various instruments referred to in the communication were brought before the society, and likewise diagrams illustrating their action and method of employment.

Dr. Gibb said that the subject of the author's paper was one of the highest importance, and in which he took the greatest interest. In the earlier part of his professional career he (Dr. Gibb) had looked forward to the time when some means might be devised for introducing fluid in a minute state of division into the interior of the bronchial tubes, which would prove more certain in its effects than the vapour inhaled from certain substances. The instrument contrived by Dr. Sales Giron seemed to answer the purpose intended, but many others had been contrived since his invention. He had employed one manufactured by Weiss, which readily answered the purpose; yet, as it soon got out of order, he had latterly given a preference to the fluid atomizer of Lewin, of Berlin, which, notwithstanding what the author had stated in favour of Siegle's and his own, he believed the most useful and convenient from its simplicity and readiness of application. In employing Siegle's, the temperature of the stream could not always be relied upon with any amount of adjustment of the cylinder for its diffusion, although it had decided advantages for introducing small quantities of certain agents. From the evidence brought forward by the author, illustrated by experiments of his own and Continental investigators, he had not the slightest doubt that any atomized fluid reached the minutest bronchial tubes and air-cells, and from his own experience of the inhalation of fluid thus atomized or pulverized he was quite satisfied such was the case. With Siegle's atomizer he had caused the inhalation of a solution of the iodide of silver for a few minutes only in a case of rapid phthisis in the second stage of the disease, with profuse expectoration and laryngeal mischief. The effect of this was a general feeling of warmth throughout every part of the chest, and the subsequent diminution of the expectoration. This feeling of warmth so generally diffused convinced him that the atomized fluid had reached the minutest bronchi. As a palliative in some cases of phthisis, and as likely to diminish the amount of expectoration, the inhalation of atomized fluids would prove useful, but it never could be relied upon as a curative agent in this disease. With regard to bronchitis, the chronic form especially, asthma, and hæmoptysis, his own experience agreed with that of the author, and showed that in many cases the greatest amount of relief could be obtained. Indeed, he had been surprised at the good results which sometimes followed, in the two former especially. He accepted the author's term atomized as preferable to pulverized in its application to fluids, and had no hesitation in adopting it. As furnishing an additional and most useful therapeutic agent in the treatment of laryngeal and chest diseases, the inhalation of certain atomized fluids must be regarded as one of undoubted value, and he (Dr. Gibb) gladly bore testimony in its favour.

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10. *Diphtheria in London.*—Dr. Thomas Hillier, in an interesting paper read before the meeting of the British Medical Association in August last, calls attention to some points in relation to this disease which have been forced upon his notice whilst analyzing the cases which came under his care at the hospital for sick children in London.

The more important of these points we shall present to our reader.

Since the beginning of 1857, there have been 85 cases of diphtheria in the hospital, of which 71 were primary, and 14 secondary; of the primary cases 37 or 52 per cent. died, of the secondary 10 or 71 per cent. were fatal. This is a large mortality, which is explained by the circumstance, that the milder cases were treated as out patients, and only the severe ones admitted into the hospital.

The affections to which diphtheria was secondary were, measles in three instances, scarlet fever in two, surgical operations in two, and once to Bright's disease, tubercular meningitis, pneumonia, typhoid fever, chorea, and convulsions, severally.

Laryngeal Complications. Of 33 cases, the larynx was involved in 23 (or nearly 64 per cent.), and not involved in 10 cases. Of the former—*i. e.*, where the larynx was implicated—15 died, and 8 recovered; and of the latter, 6 died, and 4 recovered.

Albuminuria.—Of 38 cases, albumen was present in 33, 32 of which proved fatal. Of the five cases without albumen all recovered. The albumen appeared in one case on the fourth day, in three on the fifth day, 2 on the seventh day, five on the ninth, one on the thirteenth, and one on the nineteenth day. There was together with the presence of albumen a great falling off in the amount of urine secreted, which does not accord with the observations of Dr. West.

Fatty Degeneration of the Muscular Fibres of the Heart was met with in three cases, all rather chronic cases. Each died of syncope with symptoms of asthenia and not of asphyxia.

Sickness, Dr. H. says, was always a symptom of serious import, and is generally connected with scanty secretion of urine.

One circumstance, Dr. H. says, which very forcibly struck him "in reviewing the cases of diphtheria at the Children's Hospital, is the great rarity of paralysis or other nervous phenomena as sequelæ. He has not seen, in hospital practice, any case of general paralysis, or paraplegia, or impairment of vision, and only one case of loss of sensibility of the velum pendulum palati, and one case of strabismus. In one case, fluids passed the rima glottidis, and were rejected through the tracheal tube. In private practice, although he has not seen nearly so many cases of the disease, he has met with partial amaurosis twice, with paraplegia twice, and with nasal voice several times.

With regard to the *pathology* of diphtheria, Dr. H. says: "There is no doubt that it is a general, and not a local disease. It may prove fatal even when the throat is quite well. There is no constant relation in severity between the local and general symptoms. The presence of albumen in the urine, and the occurrence of the nervous symptoms just referred to, are additional evidences in support of this statement.

"It is not a modified form of scarlatina. This was a very favourite opinion when the disease was less known than it is now. There are, I presume, now but few practitioners who adhere to this theory. It attacks quite as frequently those who have had scarlatina, as those who have not. No doubt, it sometimes follows close upon the steps of scarlatina; it sometimes complicates that disease; and it frequently occurs as an epidemic in seasons and places where scarlatina is epidemic. The albuminuria which accompanies diphtheria sets in earlier, is seldom attended with dropsy, and less frequently with convulsions and coma."

With regard to the relationship between diphtheria and croup, Dr. H. will not speak dogmatically, but he says that in his experience in London he sees no distinction between them. "Most of the cases formerly called croup would now be called diphtheria; and many of the cases now called diphtheria would ten years ago have been called croup."

The following are Dr. Hillier's *Conclusions:*—

"Diphtheria, when attacking the larynx, is not anatomically different from croup as known in London twenty years ago. There have been during the last eight years in London, an increasing number of cases characterized by asthenia, in which the fauces are the primary seat of disease. The general nutrition of the body has been much affected in these cases; the kidneys and the nervous system have frequently suffered.

"Diphtheria is, like croup, either a primary disease, or secondary to another.

"Diphtheria is infectious; but its infectious properties have not been strikingly seen at the Children's Hospital in London.

"No specific has been discovered for the treatment of diphtheria. Just as in croup, mercury has in some cases been of marked benefit; but it is a remedy which cannot be safely used in all cases. Chlorate of potash has also been of service in some instances. Alcoholic stimulants in moderation have been useful; but, even when given in very large quantities, they have not counteracted the tendency to syncope, and have sometimes appeared to aggravate the renal complications. No marked results have been obtained from the use of ice, iodide of potassium, or the perchloride of iron. Local applications are regarded as of secondary importance, except at the outset, or to correct fœtor at a later stage.

"When asphyxia is imminent, tracheotomy, or, in the adult, laryngotomy, is indicated. This operation has saved the lives of some, and has delayed the deaths of others, and rendered them less painful. The chances of its success are *cæteris paribus* much influenced by the age of the patient, and the firmness of his chest-walls. The operation is useful only by admitting air to the lungs below the narrowest part of the air-passages, thus giving a longer time for nature, assisted by art, to throw off the disease. It has no power to arrest the progress, either of the local lesions or the general disease. Internal treatment should therefore not be suspended after the performance of the operation. It is useless to resort to the operation, unless the services of judicious attendants and favourable conditions surrounding the patient can be subsequently secured. As much depends on the after-treatment as upon the skill of the operator. The tube which has been found most useful is a double one; the outer tube is bivalve, opening laterally, which, when closed, is very narrow, and can be introduced very readily into the wound in the trachea; the inner tube has a nearly circular aperture, with a fenestra on its convex aspect looking upwards. The aperture of the tube should be as large as the aperture of the narrowest part of the patient's natural air-passages."—*Brit. Med. Journ.*, Sept. 24, 1864.

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11. *Difference between Diphtheria and Croup.*—A paper was recently read at a meeting of the Medical Society of Berlin, by Dr. Veit, in which the author intended to prove that the morbid processes designated as croup and diphtheria were not so widely different as many pathological anatomists and professors of clinical medicine believed, since there was one common feature to both, viz., fibrinous exudation; and that it would therefore be better if we called the disease pharyngitis or laryngitis exudativa, and specified it according to the nature of the effusion as croupous or diphtheritic. As regards treatment, he recommended chiefly small pieces of ice to be taken every two or three minutes.

In the discussion which followed, Prof. Virchow said that, previous to his having laid stress upon the difference between croupous and diphtheritic effusions, Rokitansky and the Vienna school had confounded the two under the name of croupous, while the French school had called them both diphtheritic. Both names had reference to the presence of a false membrane. There were, however, differences between the two conditions, as in one set of affections there were loose membranes adhering to the surface, and which might be easily removed. Such affections had been associated with the name of croup, and it was, therefore, necessary to show that croup was very different from the pathological processes which Brétonneau had observed in the mucous membrane of the throat, and his successors in that of the genitals and other membranes, for in the latter there was not mere deposition of a simple loose membrane capable of being at once separated from the surface without breach of continuity, but a process was going on in the very substance of the mucous membrane, and which resulted in ulceration, so that the false membrane could only come off in the course of some days. He was even now of opinion that this separation of the two processes was not only justifiable, but important in a pathological as in a clinical point of view, for the medical practitioner would always have to ask himself the question whether the process was one of gangrenous ulceration with breach of surface, or one where the surface was only covered with a loose, false membrane, but remained itself intact. He believed it would be best to confine the name of croup to the special affection of the larynx, and to distinguish its different degrees as catarrhalic, fibrinous, and diphtheritic. With regard to the pharynx, there was no such difference, as he had never yet observed free fibrinous false membranes on the surface of the pharynx and the tonsils; there was, therefore, no croupous angina or pharyngitis. The name of croup was, therefore, more a clinical than an anatomical expression; it represented anatomically three different pathological processes, which might exist together in the same person. Thus it was by no means rare that there was true diphtheritis in the pharynx and the upper part of the larynx including the vocal cords, while below these latter there were loose membranes which it was easy to separate, and further down ordinary catarrh, which might be set down as bronchitis. If, therefore, the name of croup were given up, and the gradual differences of the pathological process were to receive separate names, it would be impossible to get on with that in practice. "Croup" did not only mean certain anatomical peculiarities, but also a series of functional disturbances. Croupous catarrh was distinguished from simple laryngeal catarrh, not so much by anatomical criteria, but by the peculiar nervous symptoms observed during life. That the former was a more severe affection might also be shown anatomically, as there was swelling not only of the neighbouring glands, but also of the glands surrounding the jugular vein, and in grave forms of the disease even affections of the spleen, liver, and kidneys.

Prof. Virchow then made some remarks about the pathological and clinical designations of disease. He said that there must always be a certain discrepancy between the two, as pathological anatomy had only to do with local processes; clinical medicine, however, with general conditions. Thus, in the same epidemic of cholera there might be cases which were, anatomically speaking, such of catarrh of the intestines, while others were such of true diphtheritis of the bowel. In certain cases of dysentery there was a diphtheritic process, while in others there was nothing of the kind; and there were cases of intestinal diphtheria without dysentery. It would, therefore, be best to retain the old expressions giving the characteristic feature of the disease, while the minor features of it might be designated according to anatomical peculiarities. If every disease were reduced to local anatomical changes, there would be great confusion, as there might be different stages, one passing into the other. By cashiering all the old clinical expressions, all etiology would be lost, and we should no longer be able to group together diseases which have a common cause. In croup there would be positive danger in doing so, since cases of true croup might be anatomically nothing but laryngeal catarrh; and yet there was a danger inherent to these cases not at all peculiar to common laryngitis. In the same manner apoplexy was only a clinical, but not an anatomical conception. Apoplexy meant a sudden cessation of function, and more especially of that of the brain. This, however, did not give us any anatomical notions, since apoplexy was not merely caused by rupture of bloodvessels, but also by emboli, etc. If people talked of apoplexy of the lungs or the muscles, meaning with that hemorrhage into these organs without cessation of function, confusion was produced. It was better to preserve the meaning of the word "apoplexy," physiologically and clinically, and to separate its different forms according to their anatomical nature—as hemorrhagic, embolic, anæmic, apoplexy, etc. If hemorrhage were identified with apoplexy, this would be contrary to the facts, as hemorrhage into the brain often occurred without causing the symptoms of apoplexy.

Prof. VON GRAEFE said that the type of croupous and diphtheritic diseases was very different, although they occasionally merged one into the other. He did not agree with Dr. Veit as to the effused fibrin being the connecting link between the two. There was no effusion of fibrin in diphtheritic ophthalmia; in such affections there was only formation of pus and of a fine granular mass. Blennorrhœa might, by infection, cause croupous and diphtheritic processes in the eye, and diphtheria might produce blennorrhœa and croupous affections. The degree of contagiosity was, however, different, diphtheria being the most contagious.—*Med. Times and Gazette*, Feb. 25, 1865.

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12. *Diphtheritic Paralysis in the Adult; Exhibition of Nux Vomica and Nitrate of Silver.*—The two following cases are published in the *Gazette des Hôpitaux* by RACISBORSKI; we had ourselves an opportunity of judging of the condition of the patients before the beginning of the treatment:—

"The patients were a gentleman and his wife, each aged about 49. In April, 1863, the husband was affected with diphtheritic angina, for which Dr. Chaillou resorted with success to cauterization and glycerine gargles. After the cure of the sore-throat, some difficulty of swallowing and even of speaking remained, and the subject complained of a sensation analogous to that which might be caused by the presence of a rag in the fauces. These symptoms were followed by numbness in the legs and arms, which gradually increased up to the period of my first vist in July, when I ascertained that the muscular power of the limbs was obviously decreased, and that the articulation of words and deglutition were impeded. The patient walked with some difficulty, but was not confined to his bed.

"Mrs. X., the wife, habitually enjoyed excellent health, and for fifteen years had borne an issue in the left arm. On the tenth day of her husband's illness, a false membrane of the size of a crown-piece formed on the surface of the sore, but she had no sore throat or any appearance of pseudo-membranous exudations on the tonsils or pharynx. Nevertheless, despite the perfect immunity of the fauces from disease of any description, she experienced in a few days symptoms precisely similar to those presented by her husband, viz., difficulty of swallowing liquids, which returned through the nose; imperfect articulation of sounds; and the sensation of a foreign substance in the throat. For the diphtheria of the arm, cauterization with nitrate of silver and glycerine dressings were prescribed.

"As the false membrane persisted, Mrs. X. consulted Dr. Richard, who applied the actual cautery. This method of treatment, instituted a month after the beginning of the disease, proved perfectly successful, and effected a prompt cure of the diphtheria, but had no influence on the paralysis, which seemed, on the contrary to increase, and invaded the limbs especially on the right side."

Such was the condition of the patients when Dr. Racisborski was consulted; this gentleman prescribed tonics which induced no favourable change. The alcoholic extract of nux vomica, exhibited in daily doses of one or two grains, caused in the course of a week improvement in the husband, but appeared to increase the severity of the symptoms in the wife. The former, therefore, persevered in the use of the remedy, and was cured in three weeks. From a quarter of a grain to one grain of nitrate of silver was then administered every day to Mrs. X., and a complete recovery was attained in a month.

These cases illustrate the propriety of resorting for the same disease to various remedies in subjects of different constitutions, and the second is calculated to encourage the hopes which have been founded on the exhibition of nitrate of silver in some forms of paralysis.—*Glasgow Med. Journ.*, July, 1864, from *Journ. of Pract. Med. and Surg.*

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13. *Use of Bromide of Ammonium in Hooping-Cough.*—Dr. R. Peel Ritchie states (*Edinburgh Med. Journ.*, June, 1864) that he has frequently employed the bromide of ammonium in hooping-cough, with relief to the spasmodic cough, and to the hoop; it has not, however, been uniformly successful, and his results have not on the whole been so favourable as those published by Dr. Gibb and Prof. Harley.

The following is a summary of his results:—

"1*st.* As to the ages of those treated. The youngest was three months, the oldest four years; the average age, twenty-three and a half months. In my experience the remedy appears to be most successful in children whose age exceeds two years.

"2*d.* As to results. In nearly all the cases there was marked relief to the hoop after a few doses had been given. This was very noticeable in those instances in which the hoop was very frequent; the report given shortly after first administration in several of such cases was that the child was much relieved.

"Infants are probably more liable to bronchitic attacks, and in them uncomplicated pertussis is more rarely met with than in older children. For this reason it possibly is that the bromide is less beneficial in those under the age of two years than in those above that age. In three of the cases death occurred—in two from bronchitis, and in the third from congestion of the lungs; but in all of these the hoop had been relieved, especially in the two younger, aged three months and twenty months. In the eldest, aged two and three-quarter years, the relief was not quite so apparent.

"3*d.* As to the dose. The quantity I have generally given has been from three to twelve grains a day, in divided doses, administered every six hours.

"These quantities are less than those prescribed by Dr. Harley, who gives a grain for each year, every eight hours, but this is regulated by the constitution and development of the child. In children of advanced age he gives large doses. In the *Lancet* of January 16, 1864, the particulars of two cases are given, the one a girl aged nine, took twenty-seven grains a day apparently for a week; the other, a boy aged six, took eighteen grains daily for the same time. In both very speedy relief occurred. In the same journal instances of a child aged three years taking eighteen grains, and of another child aged four, taking twenty-four grains a day are given.

"Dr. Gibb gives two or three grains thrice daily to infants, and four, eight, or even ten grains, as frequently to older children.

"I have not prescribed a larger dose than twelve grains in the day, but I have given that amount with benefit in cases of the age of four, three, and two and a half years. Eight grains a day I have given to children two and three years old. In one instance a child of two years old, by mistake on the part of its mother, was given, without injurious effect, fifteen grains a day for four days, but this large dose was not attended by a better result than usual. Drs. Gibb and Harley prescribe it thrice daily in water. I prefer giving it four times a day with syrup. If bronchial irritation exists, a mixture of ipecacuanha and squill is required. Dr. Gibb is also of this opinion. In complicated cases the administration of an emetic I find to be frequently necessary.

"*4th.* In what cases is it suitable? * * * Having used the preparation in upwards of twenty cases, if I may be allowed to express an opinion upon this head, it would be—that the great efficacy of the drug is in uncomplicated cases—that in those complicated with acute bronchitis or pneumonia, the benefit is so trifling that I prefer other methods of treatment—that in my experience, infants are more liable to such complications than children above the age of two years. To this I consider it to be due, that in the former the benefit from the remedy is less than in the latter—for an acutely congested condition of the air-passages appears to lessen the effect of the bromide as a laryngeal anæsthetic. That the more frequent the paroxysms of hooping, the more marked and rapid is the relief; that greater relief appears to be experienced in those of some continuance than in recent cases; and, lastly, that when chronic bronchitis is present, the bromide should not be given alone, but combined with squill and ipecacuanha mixture, and occasionally with an emetic.

"I have not observed that the bromide of ammonium has any tendency to cause nausea, or that it has any effect on the mental powers. In none of the cases in which I prescribed it have convulsions occurred."

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14. *Bromide of Potassium in Coryza, Dysphagia, and Spasmodic Cough.*—The anæsthetic effects of the bromide of potassium on the soft palate are now well known to surgeons. M. GUBLER conceives that this singular property might be taken advantage of in the treatment of various morbid conditions, and states that with this remedial agent he had succeeded in modifying in the most favourable manner coryza, angina, painful deglutition, and even spasmodic paroxysms of coughing, which occasion so much distress to persons labouring under laryngo-bronchitis and pulmonary tuberculosis.

The following is M. Gubler's prescription: ℞.—Potassii bromidi, ʒij; aquæ destill. ℥v. Distilled water must be used, and the mixture preserved in stoppered bottles; if this precaution is omitted, the solution becomes turbid and offensive. A tablespoonful morning and evening is the usual dose.

We shall revert on some future occasion to the therapeutic effects of the bromide in chest affections, but we will at present confine our observations to the prompt relief afforded by this remedial agent in consumption, when, from ulceration of the fauces, deglutition has become so painful as to deter the patient from the use of food. M. Gubler relates the case of a Zouave affected with tuberculosis, who voluntarily abstained from taking nutriment in order to avoid the torture coincident with deglutition. Half a drachm of bromide of potassium was exhibited, and immediately improved his condition. He was, after twenty-four hours, enabled to swallow bread and chicken without pain, and survived for a twelvemonth. The bromide, in such cases, is therefore a valuable sedative, and will be found efficacious for the cure of glandular angina unconnected with tuberculosis, and caused by local irritation or exposure to cold, and also for herpetic and arthritic sore-throat. M. Gubler's researches also point to the beneficial effects of the drug in the second stage of uncomplicated inflammatory angina, when the contraction of the pharynx and fauces retains sufficient intensity to compel the patients to abstain from food, and when, therefore, long and tedious convalescence, if not exhausting disease, such as diffused asthenic paralysis, may be expected to follow.—*Ranking's Abstract*, vol. xl., from *Journ. de Méd. et Chir. Prat.*, Aug. 1864.

15. *Cure of Hooping-Cough by Ergot.*—A boy, six years of age, under the care of Dr. Griepenkerl, in 1856, had had hooping-cough for a fortnight, when he was attacked by the convulsive symptoms of ergotism, which was at that time epidemic in the commune of Lutter. From the first appearance of these symptoms the fits of coughing ceased, and were replaced by simple whistling inspirations. At the end of a few days, when the child was cured of the ergotism, he was found at the same time cured of the hooping-cough, which had therefore lasted a much shorter time than usual. Starting from this fact, M. Griepenkerl administered ergot of rye to five children suffering from hooping-cough, four of whom, a year old, had been affected for three or four weeks, and the fifth, three years old, had been suffering for a year. In all a cure was nearly accomplished at the end of eight days of treatment. Later, in 1861, an epidemic of hooping-cough offered to the author a vast field of observation, and his experience now comprehends more than two hundred facts. The results of this investigation appear to vindicate to the ergot of rye an important place among the remedial means in hooping-cough. The failures in Dr. Griepenkerl's hands were few, and they ought to be attributed to the employment of ergot of bad quality. The following formula has been definitively adopted by the author as the most suitable for giving a stable compound, and one divested of the irritant properties which powdered ergot possesses. Ergot in coarse powder, 20 to 30 grains, to be boiled for half an hour in water with an ounce of isinglass; to this an ounce and a half of powdered white sugar is to be added.

Dose, a teaspoonful every two hours for a child from five to seven years old. For younger children the quantity of ergot is to be reduced to ten or fifteen grains for the same quantity of syrup. It is necessary, during the whole of the treatment, to avoid scrupulously all articles of food which contain tannin.

Dr. Griepenkerl recommends that this treatment should not be commenced until the beginning of the third week of the disease, and after all complications have been got rid of. He has remarked that the paroxysms are often aggravated during the first days of the employment of the ergot, but at the end of from five to ten days they diminish in frequency, and disappear the more rapidly in proportion as there is less concomitant pulmonary catarrh. The latter is in no respect modified by the ergot. The syrup of ergot has never been employed by Dr. Griepenkerl for more than fifteen consecutive days; he suspends its administration at the end of that time, but resumes it in a fortnight, if the cough has not been sufficiently modified. He has never seen this treatment give rise to the symptoms of ergotism.—*Dublin Med. Press*, Jan. 6, 1864, from *Deutsche Klinik.*

16. *Influence of the Vapours disengaged from the matters used in the purification of Coal Gas over Hooping-Cough.*—M. Commerege has presented to the Imperial Academy of Medicine a report on this subject, drawn up from the observation of the effects produced on 142 children affected with hooping-cough, who had been brought under the action of the gases in the gas works at St. Maudé. His conclusions are to the effect, that the treatment produces excellent results, and at all periods of the disorder. When it does not cure, it greatly ameliorates. In general, twelve *séances* are required for the cure; and each *séance* should be of two hours' duration. However young the patient, no danger results from the exposure to the gases. Then again we have Dr. Bertholles, who informs the French Academy of Medicine of the effects observed to result from the inhalation of the vapours disengaged from the remains of the materials used in the purification of gas, by children having hooping-cough. "The register of the coal works at Ternes show that, during the past six months, 901 patients have been subjected to the vapour-treatment; and that of these

219 were cured and 122 relieved. The favourable results are probably to be attributed to the ammoniac gases and the tar-vapour associated with it."—*Brit. Med. Journ.*, Nov. 5, 1864.

17. *Mild Epileptiform Disease; Exhibition of the Valerianate of Atropia.*—Dr. MICHÉA has recently published a memoir on this subject, in which he supplies us with a minute description of the milder forms of epilepsy, the symptoms of which are often disregarded, although they are but a prelude to the more violent paroxysms; it is therefore necessary to be thoroughly acquainted with these slighter manifestations on account of the greater efficacy of medical interposition at an early stage of the disease.

At this period, which has been called *giddiness*, or *vertigo*, the patient very seldom falls, but sometimes reels or drops any object he may happen to hold in his hand. If walking, he suddenly stops, and if standing, endeavours to find a seat. For a few seconds, sometimes for one only, he is unconscious. This obscuration of the intellect, this eclipse of thought, lasts but a moment; if the subject is speaking he suddenly checks himself; and if listening his attention wavers and he ceases to understand what is said, and when addressed cannot reply. This mental disturbance the sufferer is occasionally aware of himself, although it is so trifling and so transient that it often escapes detection, the persons present generally referring it to meditation, or absence of mind. Indeed this state much resembles inattention or reflection, and leaves no trace of its existence in the functions of the brain; the thread of the discourse is promptly resumed where it had been severed, the patient finishing an interrupted phrase or word, precisely like a person absorbed in thought, and suddenly recalled from his inward contemplations.

In contrast with what is observed in the more severe forms of epileptic seizures, consciousness is never entirely abolished during vertigo. The chief faculties exist, and although the patient understands badly, or not at all, what is going forward about him, he yet sees and hears. It must, however, be remarked, that the senses of sight and hearing are both, under the circumstances, liable to delusion, especially the former. Surrounding objects appear to turn round, to be double, inverted, smaller or larger than they really are, or invested with shapes and colours which do not belong to them; and this incomplete participation of the organs of special sensation in the mental disturbance may possibly account for the fact that the subjects are in some degree conscious of their condition, which they compare to transient fits of giddiness, impending syncope, or mere dimness of vision.

These epileptic symptoms betray themselves in the countenance by a slight paleness, a look of surprise, and a fixed stare, caused by a tonic spasm of the ocular muscles. Dr. Michéa agrees with Dr. Herpin, that vertigo is invariably attended with a convulsive action, rapid and partial, it is true, but generally tonic, and affecting one or several muscles.

Dr. Michéa considers the predisposing influence of eclampsy on the production of epilepsy in children as a fully demonstrated fact. In 63 instances of the latter disease he found 13, *i. e.*, somewhat less than one in four, in which convulsions more or less violent had existed in infancy.

Hence the author concludes, that convulsions supervening during the period of teething should never be neglected; that eclampsy caused by worms, and in general all convulsive attacks connected with feverishness in children, should be carefully watched, and that even after the evolution of the teeth and the expulsion of the entozoa have for a long time put a stop to the convulsions, the safest practice is still to view the patients as affected with epilepsy.

Vertigo may precede the appearance of the more severe convulsive manifestations of epilepsy, and this prelude to the disease may last for weeks, months, or even years. The order of succession of all the symptoms was most minutely registered by Dr. Michéa in the 63 cases above referred to; 37 of the patients, more than one-half of the entire number, had been liable to fits of giddiness before the appearance of the characteristic paroxysms, and in many instances the attacks of vertigo had been unnoticed, or were attributed to a different cause.

The milder symptoms of epilepsy, when uncomplicated or unrepeated, are indeed seldom estimated at their due importance by the relatives of the patient, to the great detriment of the latter. In wealthy families, several physicians are generally consulted, and the medical men who deny the existence of epilepsy are almost certainly trusted in preference to those who have taken a more unfavourable view; on account of the horror inspired by the name of the disease, and under an ill-judged desire to foster a belief that no such serious consequences are to be apprehended, parents lull themselves into security at the very time when most vigilance should be exerted, in order not to allow the precious moments to slip by when remedial agents can be exhibited with some chance of success.

Amongst these remedies, that in which Dr. Michéa places most confidence is belladonna, or preferably atropia, which he exhibits in combination with valerianic acid. The following is the author's prescription: R.—Atropiæ valerianatis, gr. $\frac{1}{3}$, confect. rosæ, q. s.—M. Divide into twenty pills.

One pill is at first taken daily for a week, when the dose may be increased to two, which must not be exceeded; the pills should be alternately taken and discontinued for a fortnight at a time, for several months, and a year or more, if necessary.

Dr. Michéa agrees with Marshall and Brown-Séquard in placing the seat of epilepsy in the medulla oblongata, and knowing from experience that atropia has a sedative effect on the spinal cord, and tends to reduce the undue excitement of that system coincident with epilepsy, he conceives himself justified in giving the name of rational treatment to that founded on the exhibition of atropia, a drug from which he has in several cases obtained the best results.—*Glasgow Med. Journ.*, July, 1864, from *Journ. Pract. Med. and Surg.*

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18. *Treatment of Acute Rheumatism.*—Dr ROBERT LAW, Prof. Inst. Med. and Clinical Med. in School of Physic in Ireland, describes (*Dublin Quarterly Journal of Medical Science*, May, 1864) his mode of treating acute rheumatism, which he asserts to be more successful than any other. It consists in a moderate venesection, almost never exceeding eight ounces, and seldom requiring to be repeated; and in the exhibition of colchicum, either in the form of the tincture or the wine of the seeds, of which preparation he does not exceed a drachm in a six-drachm mixture, or the acetous extract in grain doses, three or four times daily. "When I consider it necessary to exhibit an aperient, which I avoid as much as possible in such cases, from the pain of the motion consequent upon the operation of the medicine, I direct the following mixture: Tincture of the seeds of colchicum, one drachm; tincture of senna, half an ounce; sulphate of magnesia, six drachms; peppermint water to six ounces. I have found considerable advantage and ease to the patient from combining opium largely with the colchicum. I have already alluded to the fact of how very unsusceptible of the influence of opium persons affected with acute rheumatism are; it is quite remarkable what an amount of it they will bear without being narcotized. I constantly direct a drachm of the tincture of the seeds of colchicum, and a drachm of liquor opii sedativus, in a six-ounce mixture, or a grain of the acetous extract of colchicum and a grain of the watery extract of opium, in a pill, three times or oftener in the day. Thus have I combined Dr. Corrigan's narcotic treatment of the disease with my own. The local application to the inflamed joints which I have employed with most advantage is the tincture of iodine, and especially where there is effusion into the joints, which, in most cases, disappears speedily under its use. I have generally observed, where the pericardium or endocardium is about to be affected there is, in general, previously an excited action of the organ, in which case I add digitalis either to the mixture or pill. And when an attrition murmur, or a valvular abnormal sound, indicates pericarditis, or endocarditis, I then combine mercury with the other medicines in the following formula: Acetous extract of colchicum, four grains; calomel, three grains; watery extract of opium, two grains; powdered digitalis, one grain. To be made into four pills; one to be taken every third hour. I also direct a blister to be applied to the precordial region, and the blistered surface to be dressed with mercurial ointment, in order to bring the system speedily under the influence of this medicine—convinced as I am of its power to effect the absorption of the effused lymph, whether deposited on the pericardium, or on the

surface or in the substance, whether superficially or interstitially, in the valves. This is the stage of the disease when medicine can alone cure it.

If, however, as is often the case, the valvular murmur be overlooked, and the heart not be suspected of being involved in the general rheumatic affection, and consequently the suitable treatment not have been directed against the complication, the lymph allowed to run its unhindered pathological course, and in the exercise of its contractile property, permanently damages the valvular apparatus, the consequences of which injury become the objects of future treatment. Many question that it is within the power of medicine to restore the integrity of a valve which has been once diseased, and would rather believe that an abnormal sound which they supposed to indicate organic disease, now from the fact of its ceasing was only functional or independent of structural change. As long as I am satisfied that mercury will promote the absorption of the lymph deposited in iritis; as long as I believe that a hepatized lung will return to its original condition as soon as the system is brought under the influence of mercury, so long will I cherish the conviction that mercury will do as much for the valves of the heart, which, if not exactly identical in structure with those parts I have alluded to, are at least analogous both in structure, pathological deportment, and therapeutic susceptibilities. And, under this conviction we would explain the ceasing of the abnormal sound by the mercury having removed that which caused it. I have thought it necessary to dwell on this point of cardiac therapeutics, as I deem it of the utmost practical importance. I would also remark on the employment of digitalis in this early stage of pericarditis and of valvular disease. I have already observed how pericarditis is often preceded by an excited action of the organ. At this stage of the disease I consider digitalis is very seasonably employed, and even when lymph is effused. For as our object is now to effect the absorption of the lymph; and as we know the powers of the circulation and absorption are in an inverse relation, and therefore whatever depresses the former increases the latter, the depressing influence of digitalis on the circulation promotes the energy of the absorbents, which is required to remove the lymph. But when all hope of the lymph being removed is at an end, the time is now arrived for laying aside an agent whose direct effort is to bring the heart into a condition most favourable for a result the least to be desired, viz., adhesion of the opposite pericardial surfaces; for of course the less motion there is of the organ the less interruption will there be to this adhesion. So much for the impolicy of continuing the use of digitalis in pericarditis. And there are also objections to continuing its use in the early stage of valvular disease? Here, too, I would employ it, while my object is to remove the lymph by absorption. But I should expect as a consequence of its prolonged use a condition of the circulation—viz., its retardation—which would favour the deposition of lymph on the valves, which lymph would be carried away by the blood if it retained its normal form and velocity. Thus have we often seen in our *post-mortem* examinations what are called vegetations on the valves of the heart, which were nothing more than deposits of fibrin, which, we had no doubt, were deposited there just when the circulation was failing, and death near at hand.

The remarks which we have just made apply to the earlier stage of valvular disease, not to that stage when the valvular disease is established, and when nature, exerting herself to overcome an obstruction, puts forth increased efforts, which, to a certain extent, have a salutary tendency. The time has now arrived when this medicine, whose direct effect is to depress the action of the heart, is out of place, as antagonizing this salutary effort of nature. It is thus we regard it as ill suited to that increased action of the organ which is so constant in disease of the aortic valves, as also in the regurgitant mitral orifice, which eventuates, in both cases, in eccentric hypertrophy of the left ventricle. I am convinced the results of the treatment of heart disease would be infinitely more satisfactory than they are if more care were bestowed on distinguishing the different stages of the disease, and on ascertaining and applying the suitable treatment to each stage.

To return to our treatment of rheumatism. When the acute symptoms have passed away, and all fever gone, we now conclude our treatment with bark and hydriodate of potash, or quinine; and when stiffness of joints alone remains, with warm baths. We have ever found that, as long as the disease retains any of its acute character, so long will no benefit be derived from the warm bath; but so far from it the patient generally complains that his pains had been much worse. So that, in doubtful cases, the effects of the warm bath have served me as a test of the disease, as to its having passed from the acute to the chronic stage.

In thus asserting the advantage to be derived from bleeding in acute rheumatism, we limit its advantage to what is confessedly acute rheumatism; for we have heard physicians say that bleeding had not succeeded in cases in which they had employed it; and when they described the cases, we were not surprised at the failure of which they complained. The cases were such as we doubt much if they can be admitted into the category of acute rheumatism, although the two diseases have at least many local features of resemblance; but the constitutional symptoms are widely different. These cases are such as are designated diffuse inflammation, many of which we have met with as a complication of fever, and which we have described in *The Dublin Medical Journal*, Vol. XII. p. 187, in the following terms: 'We alluded to the occurrence of diffuse inflammation in some cases of this fever; we have had several instances of it, and had reason always to regard it as a most fatal complication. It exhibited itself most commonly in the form of tumefaction of the joints, sometimes with a slight erythematous blush. The knees, ankles, and wrists were the most common seat of this affection; the constitutional symptoms were in general, extreme prostration of the powers of the system, delirium, small weak pulse, diarrhœa, tympanitic abdomen, and an indescribable anxiety. On examination of the parts affected with inflammation, the tumefied joints were generally found to contain purulent matter of a thin, greenish, unhealthy character; and in some cases the cartilages were either in whole or in part destroyed, leaving the ends of the bones denuded and rough.'

We know that cases such as we have thus described have been taken or mistaken for cases of acute rheumatism, and have been treated accordingly; we can hardly wonder that success did not attend such treatment. If such cases have any title to be designated rheumatism, they should be designated typhoid or asthenic rheumatism. In speaking of venesection as an essential element of our treatment we deny the justice of identifying our treatment with that of Bouillaud who bled *coup sur coup;* while Dr. Griffin's remarks would at least seem to imply this. At a time when we exercised less reserve in ordering our patients, affected with rheumatism, to be blooded, we never carried it to anything like the length of the distinguished French physician.

We have already observed we gave a fair trial to every other mode of treating the disease, viz., the alkaline treatment, the citric acid treatment, the treatment with opium freely exhibited, the treatment with colchicum alone, and the treatmentment with bark, with hydriodate of potash, and none has approached the plan we have recommended in the shortness of time it required, nor has any been more certain in its results. And time and ample experience have established its pretensions with us."

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19. *Insufflation as a Remedy in Intussusception.*—Insufflation, suggested by Hippocrates as a remedy for obstructed bowels, has been less frequently resorted to in modern times than might be supposed in consideration of the relief it generally affords. Dr. Gorham (*Guy's Hospital Reports*, vol. iii.) employed it with success, and in the number of the *Edinburgh Medical Journal* for October, 1864, Dr. David Greig records four cases of intussusception in children relieved by this measure. One of these we transfer to our pages.

"M. S. G., a stout, healthy, female child, 6 months old, always enjoyed good health, never having had a day's sickness; never had any food except breast milk; never troubled with diarrhœa or bowel complaint. Was in her usual good health on Monday, 13th October, 1862, up to 6 o'clock in the evening, when, without any obvious cause, she suddenly became fretful, kicking with her feet, bending the body backwards, and screaming. In about ten minutes she became very sick and vomited severely. The skin became cold and clammy, the countenance pale, and the lips livid. In a little while she revived, but soon became restless and as sick as before. She seemed to have great pain in the abdomen, which came on in paroxysms, and to increase in intensity until she vomited, when she would seem relieved a little, or at least so faint and sick as not to scream. When given the breast, she would take it readily; but as the sickness and vomiting, with a paroxysm of pain, immediately came on, she latterly refused it. Immediately when she was seized a spoonful of castor oil was given, and hot fomentations were applied to the abdomen. The castor oil was soon ejected from the stomach, as was also a small purgative powder which was given. A warm-water enema was attempted to be administered, but the bowel seemed to be in such a state of spasm that none could be thrown up. About 8 P. M., tenesmus came on, and she passed a little fluid blood, which continued to come with every paroxysm of pain during the night. The abdomen was soft, slightly tympanitic, and not painful on pressure, except during a paroxysm of pain, when pressure seemed to increase it. On deep pressure being made over the abdomen, under the umbilicus, a very distinct hard tumour was felt, a little to the right of the mesial line. Seeing that the case was a serious one, and as the little patient was a near relation of my own, I asked my friend Dr. Pirie to take charge of the case. He attempted to give another enema, but with no better success, owing to the very peculiar spasmodic state in which the bowel was. On the morning of the 14th, as the child was no better, and as Dr. Pirie suspected an intussusception, he requested Dr. Nimmo to see the case along with him. In consultation it was decided that it was a case of intussusception of the bowel. The sickness still continued, but not so severe as on the previous day. The infant took the breast readily, and after taking it would lie still for a few minutes; pain would then seem to come on with sickness, and the milk would be ejected from the stomach with great violence, after which the child would seem exhausted and lie still for some time. It seemed to have great thirst, and took cold water greedily, which, however, was soon ejected. The pulse was about 130, small. Injections were again administered, but with the same result as formerly. As everything had been tried, and nothing had done any good, and as it was evident the child was fast sinking, it was proposed to use the air injection which is mentioned in Dr. West's work on Diseases of Children, as having been used with success by Mr. Gorham. Fortunately, Dr. Nimmo had in his library the volume of *Guy's Hospital Reports*, which contained Mr. Gorham's paper on the subject, and after each of us had perused that paper, it was resolved to give the remedy a trial, as a last resource, and in truth with no very great hopes of benefit.

"The nozzle of a small pair of bellows was introduced into the anus, and air injected to a considerable extent. Contrary to our expectation the air passed readily into the bowel, and seemed to give the child great relief. After the injection it lay very quiet, as if asleep, and evidently quite free from pain. In about twenty minutes from the time the air injection was administered, a slight rumbling noise was heard in the child's abdomen, followed by a crack so loud and distinct as to alarm the attendants in the room, who thought something had burst in the child's bowels. The child, however, continued as if asleep and free from pain, and in about half an hour a large feculent fluid stool, slightly mixed with blood and mucus, was passed without pain. During the night the child rested pretty well, had no return of vomiting, took the breast as usual, and in two days was quite well."

Dr. Greig remarks: "As an intussusception of the bowels cannot be seen or handled like a hernia or a fractured limb, many medical men are very sceptical when told that a certain remedy relieved such a case, and can only believe an intussusception to be present by seeing it at a *post-mortem* examination; this is certainly very conclusive proof, but a kind of proof we would wish to avoid, however conclusive. To my mind the symptoms of an intussusception are unmistakable, and may shortly be said to be, the sudden seizure, the obstinate vomiting, the obstinate constipation, the paroxysms of pain, the hard tumour in the abdomen, and *chiefly* the passage of blood per anum; all these various symptoms may show themselves in other diseases, but when combined together, and especially when the last mentioned symptom, the passing of blood per anum is present, I think no one can have any difficulty in forming a correct diagnosis, and must feel convinced that an intussusception is present, without the necessity of a *post-mortem* examination.

"The prognosis of such cases is always unfavourable; and it is well that the medical man guard himself by stating so, whenever he has made his diagnosis. It is true, numerous cases are on record where nature has produced a cure by the sloughing of the strangulated portion of the intestine. and the junction of the healthy parts. About two years ago, Dr. Hare had an opportunity of showing to the Pathological Society of London how neatly nature completes a cure of this kind, a patient of his having died of tubercular disease only three months after suffering from intussusception, in which several inches of the small bowel came away on the fourteenth day of the attack. At the *post-mortem* examination it appeared that the portion of the small intestine came away fifteen inches above the caput coli, and so perfect was the cicatrix, that it appeared as a mere line round the bowel, with puckering of the omentum, etc., around it. I would not, however, advise any one to forego treatment and trust to nature for a cure; as, from my experience, nature is not to be trusted even when the case appears to be one of no great urgency.

"As to treatment, purgatives in the first place naturally suggest themselves; but these are worse than useless, rarely remaining on the stomach, and if they do remain only stimulating the bowel and aggravating the disease. Warm-water enemata are useful, but can seldom be administered owing to the very peculiar irritable spasmodic condition in which the rectum usually is. In any case where this spasmodic condition is not present, or only to a slight degree, I have no doubt warm-water enemata, or, as I used in Case III., warm-water and air thrown in by a syringe would be useful. The ease, however, with which air is thrown into the spasmodically contracted rectum, when it is impossible even to introduce a teaspoonful of warm-water, gives this agent a pre-eminence over all others, and astonishes all who have seen it used. The remedy is always at hand even in the poorest cottage, no matter how far away from town. Its application is so simple as to require no direction for its use. The only necessity being that enough air be thrown into the bowel to distend it as far up as the neck of the invaginated portion, or, in other words, that the operation be continued until the child begins to be uneasy, and the belly distinctly tympanitic. Amongst other means for relief, cases are on record where the abdomen has been opened for the relief of the bowel in intussusception. It is difficult to reduce one by manipulation after death, and I have no doubt it would be much more so to do it during life."

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20. *Use of Hot Water as a Remedy for Profuse Perspiration.*—Mr. Robert Druitt calls (*Med. Times and Gaz.*, March 4, 1865) the attention of the profession to the use of hot water as a remedy for profuse perspiration. He states that "if a part of the body that is perspiring be bathed with quite *hot* water till it becomes decidedly hot and *red*, the skin will become dry, and will continue so for a greater or less period of time.

"If *cold* water be used, the part remains cool for some time and then becomes gradually warm or glowing; if *tepid*, it is usually made unpleasantly chilly and flabby; if *warm*, it is left perspiring; if *hot*, it is left hot, red, and dry.

"The terms cold, tepid, warm, and hot are merely relative; what would be warm to one would be lukewarm to another person; but when I say *hot* water for our present purpose I mean water as hot as can be borne without pain. It may be used by sponging or immersion, and must be continued till the parts treated are hot, red, and *tingling* with heat—almost scalded, in fact. A good wipe with water at 130° is easily borne; for immersion the heat must be less; but the feelings are the only guide.

"The circumstance which led me to recommend this remedy was the observation of the painful dryness of a hot skin in feverish attacks, and of the dryness produced by using too hot water in a bath, and by the clumsy use of the lamp-bath, which may make the skin dry instead of moist if not well managed.

"The cases in which I have recommended it with benefit are—first, those of general tendency to perspire to a distressing degree in hot weather, the patient being in good health. If a man who has thoroughly used a cold bath in the morning be obliged to change his shirt in the middle of the day, for example, he will keep his skin comfortably dry for a certain time by a good wash with very hot water.

"The next class of cases are those in which, with or without tendency to perspire over the body generally, but most probably without, there is a tendency to distressing perspiration of some particular part; as the axillæ, hands, feet, etc. Patients who seek relief for this are generally young persons from 13 to 20, and they often endure great misery and persecution in consequence of this symptom, which really admits of easy medical treatment. The health is sure to be improved by free purgation, and by quinine, air, exercise, etc. But the distressing local symptom may be got rid of for hours at a time by the thorough application of the hottest water to the offending part until it is red, hot, and tingling as if scalded.

"Thirdly, there are the cases of true hectic; diurnal shiverings, followed by heat, and drenching perspiration of an earthy, sickly odour, and depending (as we suppose) on absorption of decaying pus from some internal organ, probably lung, etc. In these cases I have tried every remedy I know of without result. I have caused profuse perspiration by the lamp-bath in the afternoon without preventing the access of hectic and perspiration in the evening; and confess my remedy inert—or next to it—in these cases.

"But there is a fourth variety—the ordinary night-sweat of the phthisical, not preceded by regular hectic paroxysm, but induced by all that relaxes, lessened by all that strengthens, and coming on when the patient falls asleep. For many of these cases the hot water gives relief, to a certain extent, especially if the perspiration begin, as it often does, on one special part of the body by preference, as the chest, hands, or feet. In such cases I have the testimony of patients that the hot water greatly helps to control the sweat. The way is, when the patient goes to bed, to have the chest reddened with hot water and wiped dry. One patient, whom I see daily, and who is confined to his bed, calls out for it so soon as he perceives the dampness beginning, and has it used to chest, hands, and feet, and by this means often, not always, passes a night without being obliged to shift his linen.

"In conclusion, let me say that I only offer this as a contribution towards the relief of an unpleasant symptom, and not as a cure for a disease; and that whoever uses it must recollect that it is not *warm*, but *hot* water, just below scalding point that is to be employed."

[We need hardly dilate upon the value of this announcement, should further experience confirm the efficacy of the measure recommended by Mr. Druitt.—ED. A. J.]

21. *Therapeutic Action of the Hyposulphites.*—Prof. C. O. WEBER, of Bonn, has quite recently repeated some of Polli's experiments with these articles, and has been, to a certain extent, as successful as the Italian physiologist. He gave two grammes of the hyposulphite of soda, for three days consecutively, to a large rabbit, and on the fourth day he injected a drachm of water, containing half a minim of sulphuretted hydrogen water, into the crural vein; twice this dose had, in a previous experiment, killed a cat. In the rabbit just mentioned, however, there was nothing wrong but accelerated respiration; it took food the same day, and moved freely about. There were no changes in the animal temperature. The animal now took for four succeeding days two grammes of the hyposulphite per diem, and was very well with it. The next day two drachms of water, containing two and a half minims of sulphuretted hydrogen water, were injected, but caused no bad effects, while half that dose in another rabbit had caused convulsions and involuntary evacuations. The former animal continued cheerful, and took again one gramme of the hyposulphite. A fresh injection of $6\frac{2}{8}$ minims four days afterwards only caused rapid respiration; otherwise the rabbit was very well. Four days after, ten drops were injected, again causing rapid respiration and some sluggishness, but nothing further. The day after, however, the animal appeared decidedly unwell; it sat in a corner, and seemed to have the "blues." Respiration was accelerated; two and a half grammes of the

hyposulphite were given him the same day, but from that time nothing further was done. The animal ate, but became much emaciated, and partly lost its hair, so that its appearance was anything but prepossessing; it, however, appeared to be in pretty good spirits. The feces were covered with mucus. About three weeks afterwards it was found dead. The *post-mortem* showed a moderate intestinal catarrh, but nothing else. There can be no doubt that the animal was essentially protected from the deleterious effects of sulphuretted hydrogen by the hyposulphite; and it would most likely have entirely recovered if the latter had been continued. Some other experiments with dogs, in whom putrid pus was injected, the hyposulphite having been administered for some days previously, were not so successful, as the animals died in spite of it; but perhaps a larger dose of the remedy might have had more effect. The hyposulphites are quite innocuous, their only unpleasant effects being slight diarrhœa.—*Med. Times and Gaz.*, Feb. 25, 1865.

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22. *Bulimic and Syncopal Dyspepsiæ.*—The *Bullétin Général de Thérapeutique* for August 15, 1864, gives, under this title, an extract from a work by Dr. Guipon, to which the Civrieux prize has been awarded by the Academy of Medicine.

Bulimic dyspepsia has been several times met with by Dr. Guipon, independently of any other affection than nervous gastric disturbance. Its essential character is not only an exaggeration of the appetite, but also an actual increase of the digestive power. Normal digestion supplies the wants of the economy, and imparts a feeling of being satisfied; in bulimia, on the other hand, although digestion takes place regularly, the sensation of appeased want is not felt, or is only transient. Bulimia, in its simple form, is in fact a disease characterized by excess and exaggeration of function, and is the converse of atonic dyspepsia, where the digestive power is lessened. Bulimia may, however, be accompanied by other dyspeptic symptoms, such as pain, acidity, or pyrosis; these are relieved by taking food, but reappear when the digestive process—rapidly performed—is completed. Dr. Guipon has met with the disorder in both the acute and the chronic form.. The latter is much the more obstinate and strongly marked; and of it he gives the following description:—

The patients complain that they are dying of hunger; that they constantly require to take food for their nourishment. It is in vain that they multiply their repasts, and take meat six, eight, or even fifteen times in the day; they are always in the state of persons suffering from excessive hunger and inanition; they feel fatigued and languid, are much depressed, and their intellectual faculties are weakened. Sleep even does not interrupt the morbid hunger; to obtain rest, the patients are obliged to take food several times during the night.

For the treatment of bulimia in the acute form, or in the chronic form when not of long standing, medicine possesses means of more or less efficacy. In inveterate cases, the medical art is less successful. Bulimia, when temporary, is almost always connected with some general disturbance, especially hysteria; and hence the remedies which act on the nervous system generally will influence the digestion. Antispasmodics, sedatives, emollient or calmative baths, will be the remedies that will present the greatest chance of success, when used in combination with suitable hygienic regulations. In the chronic form of more or less duration, therapeutic means have in most cases only relatively advantageous results. Opium and its preparations retard digestion and the solicitations of the appetite; but, like all palliatives, they soon fail in producing this effect, or give rise to symptoms which necessitate the suspension of their employment. It is the same with the various narcotics, applied internally or externally; with nitrate of bismuth, arsenic, iodine, etc. The remedy which has seemed to M. Guipon to succeed best, has been raw meat, minced. In a very obstinate case, by means of this, he succeeded in procuring more lasting relief than had been afforded by a host of medicinal substances variously combined. The failure of strength, which is always so great and remarkable in bulimic patients, notwithstanding that a state of *embonpoint* is often very perceptible, is scarcely relieved by tonics. This condition has always appeared to Dr. Guipon to be in proportion to the over-activity of the digestion; so that, in fact, the less bulimic patients eat, the better condition they are in. With this increasing weakness and feeling of exhaustion, it naturally follows that the patient becomes discouraged. As a prophylactic measure, less copious and less frequent meals would be proper; but how can patients be expected to submit, who are constantly tormented by hunger, and obtain relief only by satisfying it? The advice to lessen the food is easy in theory, but almost impossible in application. The use of large quantities of wine has not appeared to Dr. Guipon to produce any appreciable result.

Syncopal dyspepsia was admitted as a variety of dyspepsia by Sauvage, but has since been rejected. Dr. Guipon observes, however, that the occurrence of syncope during digestion does not indeed constitute dyspepsia; but that, when difficult digestion, attended with more or less pain, and without flatulence, is frequently accompanied by syncope, this characteristic symptom is at least sufficient to entitle the disease to be considered as a special form. Feeble, impressionable, anæmic females, in a state of pregnancy, are the most predisposed to the disease. The digestive function, slowly and painfully performed, appears to absorb all the powers of the economy; there is a feeling of fatigue, the circulation becomes slow, and the harmony of the functions is broken; the pulse becomes weak, the respiration is lowered, the eyelids cannot be raised, sensation is diminished or lost, and the extremities become cold. This state is sometimes of equal duration with the digestive process. If the patient is or wishes to remain in a state of rest, the circulation, and sometimes the respiration, are entirely interrupted, and true syncope is produced. The patient either remains sitting, or, what is less dangerous, falls on the floor, and gradually recovers; remaining, however, plunged during several hours in a kind of syncopal torpor. Dr. Guipon distinguishes three varieties of the disease: the simple form, which has just been described; the gastralgic, which is accompanied by more or less severe pain in the stomach; and the syncopal dyspepsia of pregnant females. The occurrence of the last-named form is accounted for by the frequent diminution of the blood-corpuscles in the first half of pregnancy, in connection with the marked nervous susceptibility and disturbance of the digestive function which attend this condition.

The treatment of syncopal dyspepsia must generally be that of general atony—of chloro-anæmia. Tonic ferruginous medicines must be continued until the symptoms have disappeared. The digestive function itself, being the occasional cause of syncope, should be lightened as much as possible; and for this purpose the meals should be multiplied, and consist only of light and easily digestible food; such as soups, meat-jellies, hashed meat, soft boiled eggs, chocolate, etc. During meals, all excitement and exertion, and fatiguing position, must be avoided; and, during digestion, any tight articles of clothing must be loosened, Parties, where there is excitement and more or less vitiated air, and prolonged meals, must be carefully avoided. If the disease continue in spite of these precautions, the horizontal position must be assumed after each meal, and a sinapism applied to the epigastrium. If the syncopal state persist, ordinary remedies must be employed; such as ether, friction of the temples with strong vinegar, inhalation of ammonia, and sinapisms. When the disease is accompanied with hysteria, antispasmodics, given either with iron, or in enema, an hour before each meal, will aid in preventing the attack. Finally, an attentive study of the proximate causes of the syncope will often show what is produced by difficult digestion of certain articles of food. These, then, are to be abstained from if of little importance: but, if otherwise, proper remedies must be administered, among which tonics, sedatives, pepsine, and alkalies, will always hold the foremost place.—*Brit. Med. Journ.*, Nov. 5, 1864.

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23. *Experiments on Fever and Inflammation.*—Prof. Weber has found that if fresh, putrid, or dried-up pus was injected either into the subcutaneous cellular tissue or into the pleural cavity of animals, local inflammation and fever were produced. The latter, however, was not dependent upon the former, since it began immediately after injection, and reached its maximum a few hours afterwards. The effects of fresh, warm pus were chiefly striking. After the injection of such the temperature rose from 2° to 4° within an hour or two, more espe-

cially if it was injected into the pleural cavity. By repeating such injections, artificial hectic fever might be caused. The loss of body-weight in consequence of this was far greater than could be accounted for by the withdrawal of food, which such animals instinctively refused. A fasting dog loses, according to the researches of Bischof and Voit, about 1.8 per cent. of his body-weight per diem, while this loss in artificially produced fever amounts to 4 per cent. and more. What is called "surgical fever," and which is a consequence of the injury caused, generally only sets in about the third day after injection. If pus is filtered, and the serum injected, the effects are much the same as with non-filtered pus, although not quite so striking. Prof. Weber concludes from those observations that in surgical fever, pyæmia, and septicæmia the blood is infected by the pus as by a ferment, and obtains "pyrogonous" (fever-producing) qualities. In order to test this supposition by experiment, defibrinized arterial and venous blood of such animals was injected into others, but without producing more fever or inflammation than might be readily accounted for by the injury. While in the experiments with pus the temperature increased 2° or 4°, in those with blood it only rose about 0.6° to 0.9°, and this was only the case on the third or fourth day after injection. Pus and other exudation fluids, if directly injected into the blood, have the same effects as if injected into the cellular tissue; but the rise of temperature appears to be a little higher in the former than it is in the latter. This increase is not at all due to the metastatic inflammations which are sometimes caused by emboli, or to the diffuse inflammation of the mucous membrane of the intestines, or to pleuritis and iritis, which latter are of very rare occurrence; for these only show their effects some days afterwards. If there is, however, violent diarrhœa, the temperature soon decreases; and this steadily goes on until death, just as in cholera. Embolism has nothing to do with this; for if small globules of wax are injected into the blood, the temperature does not decrease. An emulsion of fat injected into a cat caused its death in a few hours, with simultaneous depression of temperature from 102° to 96°.8.

Diluted sulphuretted hydrogen water injected into the veins, caused the temperature to increase immediately. After the injection of sulphuret of ammonium into the blood, the temperature rose for a time, but was afterwards diminished. Butyric acid seemed to cause the most marked diminution of temperature. In a cat, in which 2½ minims of butyric acid, with one drachm of water, were injected, the temperature fell from 102° to 85° within five hours, and the animal died the following night. If the blood of such animals, in which pus injection had caused fever, was directly injected into the veins of other animals, fever was also caused in these latter. The temperature rose within a few hours by 2°.5, which was accompanied with acceleration of the pulse. In one such experiment, however, there ensued violent diarrhœa and considerable diminution of temperature, which may perhaps have been due to the destruction of blood globules, which was shown to have occurred to a large extent.

It therefore seemed probable that in every inflammation the blood receives substances which produce fever as ferments would do. The blood of men suffering from inflammation could not be used in experiments tending to elucidate this point, as M. Panum has shown that the blood of one species is poison for another. Inflammation was, therefore, artificially caused in dogs, in order to exclude such errors. A fracture was produced and a good deal irritated, for the purpose of producing febrile reaction. Blood taken from such an animal, when injected into the veins of another, caused invariably a considerable increase of temperature, which sometimes even went beyond that of the animal first experimented upon. Fluid expressed from the lungs of a man who died of pneumonia was injected, after having been well filtered, and caused febrile symptoms. Even where there was originally no fever, but only rapid degeneration of tissue, fever could be artificially produced. Thus, it is known that after section of the vagi animals get inflammation of the lungs, but no fever. Blood taken from a dog thus treated caused fever in another. The same result was obtained with the blood of a dog who had been poisoned by cantharidine, but had had no fever previous to death. Fibrin is not the vehicle of fever in such cases, for in all these experiments fibrin had been separated from the blood. The quantity of blood injected having always been a small one when compared to the body-weight—viz., from three to eight drachms—its action certainly resembles that of a ferment. These experiments explain why fever is so very violent in certain diseases where the quantity of ferment passing into the blood is large, as, for instance, in peritonitis and acute rheumatic inflammation of the joints; at the same time, they give us a clue why it is that in other affections metastatic inflammation may be caused without the intermedium of emboli, as, for instance, endo- and pericarditis from rheumatic fever, parotitis from orchitis, and inflammation of serous membranes from pyæmia and septicæmia.—*Med. Times and Gaz.*, Feb. 25, 1865.

24. *Sea-sickness as a Form of Hyperæsthesia.*—Dr. J. ALTHAUS, in a paper read before the Royal Medical and Chirurgical Society (Jan. 10, 1865), observed that "most writers on sea-sickness consider this affection to be due to hyperæmia of the brain and spinal cord, or to a morbid condition of the gastric nerves. The object of this paper is to show that sea-sickness is, in reality, caused by anæmia of the brain and the cervical portion of the spinal cord, arising from insufficient power of the heart, and whereby a general increase of reflex excitability throughout the system is brought about. The first and most constant symptom of the disorder is not retching or vomiting, but vertigo, which is most severe in the standing posture, and at once relieved by a strictly horizontal position, and which is thus proved to arise from a deficient amount of blood in the nervous centres. The increase of reflex excitability is also shown by greater sensitiveness of the patient to light, sound, touch, etc.; and in some cases there are even reflected spasms in the lower extremities. It is, however, greatest in the stomach, as evidenced by retching and vomiting, the degree of which is dependent upon the posture of the patient, but not upon the full or empty condition of the stomach, or its greater or less vital power. This increase of excitability is, after a time, generally followed by a considerable diminution of it, there being great torpor and profound indifference. The organ primarily disturbed, therefore, appears to be the heart, which, in consequence of the ship's motions, becomes unable to propel the blood with sufficient power into the nervous centres. The blood is accumulated in the chest and the abdomen, where it produces a feeling of pressure and heat. Persons with a strong heart and a slow pulse generally suffer little from sea-sickness; while irritable people, with a quick pulse and a tendency to palpitations, are more liable to be affected. This explains to a certain extent the different liability to sea-sickness of the different nations; for, as a rule, the French and Italians, being of a more irritable temper, suffer most, the Germans less, and the English least, of the disorder. The treatment of sea-sickness flows directly from the pathology just enunciated. Our task should be to facilitate the afflux of blood to the nervous centres, and to strengthen the heart's action. For this purpose a horizontal position should be enjoined, and a few tablespoonfuls of well-seasoned beef-tea, and small doses of brandy, should occasionally be given."—*Med. Times and Gaz.*, Feb. 4, 1865.

25. *Organic Lesion of the Nervous Centres in General Paralysis.*—M. JOIRE has described as a lesion invariably attending the general paralysis of the insane, the development, on the anterior and inferior surface of the fourth ventricle, of small mammillated projections or granulations, resembling the *cutis anserina*. The appearance is marked in proportion to the duration of the disease. In patients who die at an early stage, the granulations are numerous, very small, and appear like scattered grains of sand. In cases of long standing, the projections are large, whitish or transparent, and of a sufficiently firm consistence to feel like rugosities. They attain their greatest development at the lower part of the floor of the fourth ventricle, at the level of the point of divergence of the restiform bodies. The lesion is generally attended by more or less considerable dropsy of the ventricles and meninges. It is sometimes accompanied by softening of the superficial layer of cerebral substance in which it is seated; this layer has then a gelatinous semitransparent appearance, and is easily raised by the handle of the scalpel. In five or six cases, M. Joire has found similar

granulations, generally very small and numerous, in the parts forming the floor of the lateral ventricle.—*Brit. Med. Journ.*, Nov. 5, from *Bull. Méd. du Nord*, and *Gaz. Méd. de Paris*, Aug. 27, 1864.

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26. *Pathology and Treatment of Aphthæ.*—In the *Gazette Hebdomadaire* Dr. Jules Worms treats, in a recent paper, of a disease which is lost in a host of buccal affections described by modern authors. His subject is *aphthæ*—a denomination formerly applied to every superficial and acute irritation of the mucous lining of the mouth, and which Guersant, Billaut, and Gardien have shown to consist in a vesicular and ulcerous eruption of the mucous membrane, which runs its course in the period of one or two weeks.

From minute examination of the deposit on the surface of aphthæ, Dr. Worms concludes that it consists of a fatty matter, which is not to be found in any other disease of the mouth, and exclusively characterizes aphthæ. The epithelium rises and soon breaks, exposing to view a yellowish secretion, previously discernible through the transparent cuticle, and of which the microscope and chemical tests invariably show the sebaceous nature. It may, on the other hand, be remarked that aphthæ are never met with on the anterior portions of the mucous membrane, where anatomists have failed in discovering any muciparous glands and where *herpes labialis* more commonly occurs; hence Billard's surmise that aphthæ are a disease of the mucous follicles, characterized by a peculiar sebaceous deposit, acquires additional probability.

In Dr. Worms' opinion aphthæ are, therefore, but the *acne* of mucous membranes.

This practitioner infers from the solubility of the exudation in ether, that this substance may be a useful local remedy for aphthæ. The pain caused by the eruption, and the difficulty of checking its progress, are well-known features of the disease, and the inefficacy of cauterization, chlorate of potash, anodynes, and other methods of treatment usually prescribed, is very generally acknowledged. Dr. Worms has, on the contrary; resorted to ether with much benefit; this remedial agent removes the yellowish secretion, a new epithelium promptly forms, and no trace of the superficial ulcers remains beyond slightly increased vascularity of the mucous membrane. Either may, therefore, be applied locally with advantage, but the fact of the frequent connection of aphthæ with gastric disturbance must at the same time be borne in mind.—*Glasgow Med. Journ.*, July, 1864, from *Journ. of Pract. Med. and Surg.*

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27. *Itching in the Affected Parts in Bronchitis and Coryza caused by Bacteria in the Secretions.*—M. Pouchet was led to suspect that the itching in the affected parts, often experienced by patients, in bronchitis, coryza, and otitis might be analogous to the same sensation produced by ascarides, and be occasioned by microscopic animalcules. This idea led him to examine the sputa first expectorated by a patient with slight pulmonary catarrh who had been awakened from a calm sleep by a violent itching in the trachea, when he found the secretion to contain an immense number of bacteria moving rapidly; some monads were also present. In half an hour afterwards, the expectoration, which was abundant, presented no trace of these organisms. A similar observation was made in a case of coryza; as well as in one of chronic otitis of the external ear. M. Pouchet says that the appearance of these animalcules—bacteria, monads, and vibrios—coincides with the rapid putrefactive changes undergone by the secretions of the mucous membranes and of some parts of the skin, under the influence of an elevated temperature and of retention on the surface of the membranes.—*Gazette Médicale de Paris*, Nov. 19, 1864.

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28. *Spores of the Achorion Schonleinii in the Air surrounding Patients affected with Favus.*—In order to demonstrate the possibility of favus being propagated through the medium of the air, without mediate or immediate contact or inoculation, M. Bazin has performed the following experiments: He selected a patient, aged sixteen, who had suffered from favus for seven years, affecting the whole of the hairy scalp, and placed him under such circumstances that a current of air passing over his head was directed against two jars filled

with ice, and placed in a basin at a distance of fifty centimetres. By making the patient rub his head and hair, the current of air carried to a distance particles of favus crust, visible to the naked eye, in which the microscope discovered the existence of the achorion. But as the current of air passed over the vessels of ice it deposited its moisture, and this running down the sides of the vessel was collected in the basin below. In the fluid a great number of isolated spores were found. The experiment was repeated several times, and on each occasion thirty or more spores were demonstrated in a single drop of the liquid. The author concludes that the spores may be carried by atmospheric air, and that what was formerly only an hypothesis is now a demonstrated fact.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865, from *Gaz. Méd. de Paris*, July 30, 1864.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

29. *Excision of the Tongue.*—Prof. SYME, of Edinburgh, reports (*Lancet*, Feb. 4, 1865) a successful case of this. Some years ago he performed the operation in two cases, but both terminating unfavourably he has since repeatedly declined trying it again. In November last, however, a man, 50 years of age, applied to Prof. S. on account of a very formidable morbid condition of his tongue. "From its point to the root it was swollen and indurated, the surface being of a brown colour and roughly tuberculated, so as to resemble the back of a toad. It was also nearly quite immovable, and, from completely filling the mouth, not only prevented articulation, but rendered deglutition impossible with respect to solids and extremely difficult in regard to fluids. From the same state of matters, there was a most offensive fetor through mucus secreted by the unhealthy surface not being permitted to escape.

"The patient had suffered from uneasiness in his tongue for many years, but neither articulation nor deglutition were seriously affected until 1862. He has since been under medical treatment without benefit. As palliation seemed all that could be expected, Prof. S. offered some suggestions with that view, but soon afterwards the symptoms became aggravated and death from starvation seemed imminent, and he appealed to Prof. S. for relief; to this the professor replied that the only effectual remedy was removal of the tongue, and that this could not be done without very serious danger to life, so that the operation promised nothing more than a chance of escape. This slight encouragement brought the patient back, and he arrived here on the 27th of December.

"Being thus as it were compelled to make another trial of excision, I carefully considered all the circumstances concerned that might tend to interfere with its successful performance. Of these the one which most prominently presented itself was the prevention of voluntary deglutition that must result from depriving the os hyoides of the power by which it is drawn forwards. In the common cases of cut-throat, where a large transverse wound is made into the pharynx, although the suicide rarely accomplishes his object in the first instance, he still more rarely escapes the fatal effect of pulmonary inflammation induced by irritation propagated from the larynx; and I did not forget that both the patients on whom I had performed the operation in question died from purulent effusion into the lungs. Instead, therefore, of cutting through all the muscles of the os hyoides, as had been done in the former cases, I resolved to retain the mylo-hyodei and genio-hyodei entire, and divide merely the attachments of the genio-hyoglossi. I also thought it would be better to perform the operation without chloroform, since the patient, instead of lying horizontally, might thus be seated on a chair, so as to let the blood run out of his mouth and not pass backwards into the pharynx.

"The operation was performed on the 29th, with the assistance of Mr. Annandale, Dr. Sewell, and Mr. Cheyne, to the first of whom I am especially indebted for his able co-operation. Having extracted one of the front incisors, I cut through the middle of the lip and continued the incision down to the os hyoides, then sawed through the jaw in the same line, and, insinuating my finger under the tongue as a guide to the knife, divided the mucous lining of the mouth, together with the attachment of the genio-hyoglossi. While the two halves of the bone were held apart I dissected backwards and cut through the hyoglossi along with the mucous membrane covering them, so as to allow the tongue to be pulled forward and bring into view the situation of the lingual arteries, which were cut and tied, first on one side and then on the other. The process might now have been at once completed had I not feared that the epiglottis might be implicated in the disease, which extended beyond the reach of my finger, and thus suffer injury from the knife if used without a guide. I therefore, cut away about two-thirds of the tongue, and then, being able to reach the os hyoides with my finger, retained it there while the remaining attachments were divided by the knife in my other hand close to the bone. Some small arterial branches having been tied, the edges of the wound were brought together and retained by silver sutures, except at the lowest part, where the ligatures were allowed to maintain a drain for the discharge of fluids from the cavity.

"Next day I visited the patient, and finding him in all respects comfortable, inquired if he could swallow. In reply he pointed to a drinking-cup containing milk, and intimated that he wished it to be filled; then, placing the spout between his lips, while his head was bent backwards, he drank the whole without any cough or sputtering. Having seen this, I felt assured that the result would be satisfactory, and was not disappointed, as everything went on well afterwards. The only inconvenience experienced was from the edges of the jaw being occasionally displaced; but this was easily remedied by an ingenious contrivance of Mr. Wilson, the dentist, who, finding that a silver cap inclosing the teeth, was not sufficient for the purpose, fashioned a shield of gutta-percha, embracing the chin on each side, and secured to the metal plate by a wire.

"Under an ample supply of nourishment by milk, soup, and soft solid food, there was a rapid return of strength, so that an improvement in this respect was almost daily observable, and before the end of three weeks the patient declared that he had never felt better in his life. He returned to Manchester on the 23d of January.

"Excision of the tongue has thus afforded complete relief in a case of the most formidable and distressing disease. How far the relief thus obtained may prove permanent, and how far it may admit of being extended to cases of a similar kind, are questions that can be determined only by experience. But the frequency of malignant growth affecting the tongue in an otherwise sound state of the system urgently requires the truth to be ascertained in regard to the value of a remedial measure; and if the operation is now, as I trust it has been, freed from the chief danger attending its performance, facts sufficient for the purpose will probably ere long be accumulated."

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30. *Tracheotomy in Diphtheria.*—Dr. Geo. Buchanan calls attention (*Glasgow Medical Journal*, Jan. 1865) to two modes in which diphtheria proves fatal. "In one class of cases," he says, "the death is from asthenia, in another from apnœa. In those in which the patient sinks from debility, the surgeon is unable to ward off the fatal result; in the other, when suffocation is imminent from extension of the diphtheritic exudation into the larynx and trachea, then tracheotomy will prevent the impending death, and in many cases give time for the patient to recover from the disease. While always willing to admit that at certain stages of *croup* tracheotomy was admissible, I was at first a partaker of the wide-spread opinion that it was not practicable in diphtheria; but experience has shown me that it is quite as applicable to those cases of diphtheria to which I have just alluded, as it is to cases of croup."

"The question is," he further remarks, "'Can tracheotomy save the lives of any children after medical treatment has proved unavailing?' That it has done so is manifest, and the only other point to which I desire to draw the attention of the profession is, to have recourse to the surgical means somewhat earlier in the progress of the case than has hitherto been done. When remedial measures have failed, and when the disease is still extending, then the surgeon should interfere before the strength has been reduced by the ineffectual struggles of the patient to obtain air through the obstructed air-passage.

"I have now performed tracheotomy twenty-one times, with the result of seven recoveries; and if it be remembered that the patients were all on the point of death from suffocation, it cannot but be regarded as an encouragement to the surgeon to endeavour to save life by operative interference in the later stages of this most fatal disease."

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31. *Paracentesis Thoracis.*—M. MARROTTE, of the Pitié Hospital in Paris, has recently placed before the profession in France a summary of the present state of knowledge in that country, and of the opinions at present there held regarding the operation of paracentesis thoracis. The subject has been repeatedly, since 1836, brought before the medical societies of Paris; it has been discussed five times in the Academy of Medicine since 1849; and in 1854 was the subject of a report by M. Marrotte. In the present day, says M. Marrotte, paracentesis thoracis is universally recognized as an operation; but there are two opinions as to the circumstances under which it should be performed. Some regard it as an operation of necessity, admissible in cases only where death is imminent; while others employ it with the view of preventing grave accidents, and even of facilitating the cure of the disease. The points on which M. Marrotte specially comments are the following:—

1. The accidents attending paracentesis thoracis as an operation.
2. The information which we possess regarding sudden death during an attack of pleurisy, the frequency of its occurrence, its causes, and the means of preventing it.
3. The indications for performing paracentesis in—*a.* Acute and chronic serous effusion; *b.* Sero-sanguinolent effusion; *c.* Purulent effusion.

1. As regards the accidents attendant on paracentesis thoracis as an operation, its partisans have affirmed that it has never in their hands produced mischief; while its opponents have accused it of always having a casual relation to the deaths following it. On this, M. Marrotte admits that, while it is true that death has generally been the result of tubercle, cancer, lobular pneumonia, pericarditis, endocarditis, hemorrhage into the pleura or bronchi, there are several instances on record, in which the operation cannot have been unconnected with the fatal result. Thus, in two cases, death occurred within twenty-four hours without evident cause; in two others, air entered the pleura; in one, the operation appeared to M. Marrotte to increase the inflammation and promote the transformation of the effused fluid into pus; and, in one related by Claude Bernard, and also in one seen by M. Marrotte, fatal peritonitis was apparently produced by puncture of the diaphragm. M. Woillez has stated that the lung has sometimes been perforated, but that the lesion has escaped notice on account of the small size of the opening; but M. Marrotte regards this as not having occurred so frequently as is supposed. He admits, however, that, in a case observed by Aran, pneumothorax was really produced by puncture of the lung. There are also on record a case in which the pleura was detached; several where the escape of the fluid through the canula was obstructed by false membranes; and others where the trocar was plunged into a mass of dense false membrane.

Other alleged consequences of paracentesis thoracis have been syncope, cough, and inordinate flow of blood towards the thoracic organs, producing streaks of blood in the sputa, hæmoptysis and pulmonary apoplexy, the rapid reproduction of the effused fluid, sanguineous effusion into the pleura, or the development of pneumonia or the exacerbation of the pre-existent pleurisy. M. Marrotte regards these accidents as being, when of any importance, attributable to the disease rather than to the operation.

But, while paracentesis thoracis is a more harmless operation than is supposed by many, M. Marrotte regards its innocuity rather as an excuse for than as a justification of its performance. Accidents not met with in one series of cases may occur in another series. It is not every practitioner who possesses the tact necessary to prevent the operation from being improperly or unnecessarily performed. Whenever a remedy is applied, there should be reasons for doing it; and the habitual harmlessness of an operation is not one of them.

2. Sudden death has been affirmed by observers of high repute to occur more frequently in pleurisy than in other diseases. The nature of the functional disturbance produced by the effusion is favourable to this result; but M. Marrotte asks, is sudden death as frequent as some believe it to be? M. Marrotte does not deny that death occurs suddenly in pleurisy; but he has so rarely observed it in his twenty years' hospital experience, he has found the same facts so often adduced in support of the statement made as to its frequency, it is so easy to be misled by simple coincidences, and facts multiply so rapidly when they are sought for, that he suggests a comparative study of the question, with reference to all diseases. Some years ago, seven patients died suddenly, in his practice and that of M. Gendrin, within a few months, during convalescence from typhoid fever; and he asks whether it must be thence inferred that sudden death frequently occurs in typhoid fever?

In 1854, syncope was regarded as almost the only cause of sudden death in pleurisy. It was considered to be favoured by the impediment offered by the effusion to the respiration and circulation: fatal syncope being determined, in these conditions, by violent movements, too rapid breathing, or mental emotion. But, while syncope is a plausable explanation of death in some cases, where there is no other apparent cause than excessive effusion with or without displacement of the heart, the syncope is often better explained by the coincidence with the pleurisy of disease of the heart, especially of the pericardium.

In other cases, death has really resulted from the presence of coagula in the heart or pulmonary artery; either formed on the spot, or carried thither as emboli. The presence of these clots cannot be attributed to the amount of effusion; for they have been met with where there has been but little. In M. Marrotte's opinion, abundant effusion predisposes to the formation of clots only through the impediment offered to the circulation and respiration. Slow asphyxia, much more insidious than rapid asphyxia, produces in the blood a relatively increased proportion of fibrin, which recent observations have shown to be favourable to the formation of clots.

M. Marrotte, agreeing with M. Goupil, observes that sudden death in pleurisy occurs at so late a period of the disease, that the fear of this event does not warrant the premature performance of paracentesis; and that it is always preceded for a sufficient length of time by premonitory symptoms.

3. M. Marrotte now proceeds to consider the indications for the operation; and first, in cases of serous effusion. In cases of pleurisy attended with excessive effusion, paracentesis is absolutely necessary when asphyxia is imminent, whatever may be the concomitant symptoms. But, when the respiration and circulation are not markedly impeded, the immediate performance of the operation is not necessary, even though the viscera be notably displaced, and the heart even pushed beyond the middle line; by delaying it too long, however, there is danger lest mental emotion or physical effort may produce rapidly fatal syncope or pulmonary congestion.

If there be slow asphyxia, or acute asphyxia, as in cases where the ascent of the effused fluid is rapid; if dyspnœa be evident to the patient, or to the physician alone; if the circulation be impeded; if the pulse be unequal, irregular, intermittent; if syncope be present or be threatened—the operation should be performed, even when there is no displacement of the heart. This precept is strongly insisted on by M. Marrotte; with one limitation. Effusion may take place rapidly, and produce dyspnœa, without compromising life; the lung is surprised for the moment, but soon becomes accustomed to the new condition in which it is placed.

The presence of effusion is almost unanimously considered to be a condition necessary for operation; but some practitioners regard the mere presence of effusion itself as a sufficient indication for paracentesis; while, with others, it must have reached a certain degree and produce certain symptoms.

Acute Serous Effusion. It has been recommended by some practitioners to puncture the pleura at a period varying from the seventh to the eleventh day; while others advise that the operation should be delayed until the fifteenth or even the twentieth day. But, says M. Marrotte, those who thus lay down absolute rules as to time, forget that all cases of pleurisy do not run through their stages in the same period; that their rise and progress are subject to conditions which vary in each case; that the cause of the effusion is not removed by the operation; and that of itself it cannot, beyond its physical effect, fulfil the necessary indications of treatment. This is so true, that M. Béhier, one of the advocates of early operation, after recommending the ninth or eleventh day for its performance, recognizes the impossibility of precisely fixing the proper moment. M. Marrotte seeks indications in the state of the disease itself rather than in general arbitrary rules. Except in cases where death is imminent, he holds that it is impossible, at a period varying from the seventh to the eleventh day, to affirm that a serous effusion, the result of latent pleurisy, will not yield to medicinal treatment.

The presence of active inflammation is a contraindication to the operation; if, however, the symptoms be very urgent, puncture of the chest may be resorted to in order to procure temporary relief, but it will not prevent the reproduction of the fluid.

It is generally admitted that paracentesis is neither necessary nor useful in recent cases, where the effusion is moderate in quantity; but some maintain that, where the effusion, although not so great as to produce danger, is yet considerable, the operation may shorten the duration of the medicinal treatment, and prevent the formation of solid adhesions. M. Marrotte, however, cannot regard paracentesis as presenting great advantages over ordinary treatment in these cases. It may be that dyspnœa and febrile symptoms have ceased, as if by enchantment, after paracentesis; and evacuation of effused serum has been proposed as an antiphlogistic remedy in inflammation of the tunica vaginalis and of the eye; but this practice must be justified by more numerous and better studied facts before it can be generally adopted. M. Marrotte acknowledges, however, that he has met with cases where early paracentesis has appeared to shorten the duration of medicinal treatment, and to prevent contraction of the chest.

In the same category with very abundant effusion, as regards the effects produced on the respiration and circulation, may be classed those cases where, in addition to effusion, some impediment to respiration, such as bronchitis or œdema, exists in the opposite lung; and cases of double pleurisy, especially when complicated with pericarditis. In such cases, M. Marrotte agrees with M. Béhier in admitting the utility, and even the necessity of paracentesis.

M. Béhier recommends the fluid to be evacuated when the patient seems too feeble to be able to bear the long process of absorption of an effusion occupying the whole, or nearly the whole side of the chest. But, in cases of this kind, M. Marrotte says, the probabilities of non-reproduction of the fluid must be considered; for evacuation of serous cavities tend indirectly to induce exhaustion, and to produce the very result which is sought to be avoided.

M. Marrotte confims a statement made by M. Béhier, that the presence of pulmonary tubercle is not an absolute contraindication to paracentesis. He has performed the operation in a patient with pulmonary tubercle and ascites, who was in danger of suffocation. The fluid was partly reproduced; but, under the influence or tonics, cod-liver oil, nutritious diet, and the external use of tincture of iodine, the effusion both into the pleura and the peritoneum disappeared. The patient, however, died a year afterwards of tubercular disease of the meninges. In two or three other cases, the pleurisy and the pulmonary tubercle went on to a fatal result. In one other case only, where pulmonary tubercle coexisted with considerable effusion, M. Marrotte obtained a successful result by paracentesis. As far as can be judged, the cases of this description where paracentesis is likely to succeed, are those in which the tubercles are stationary, or undergoing very slow development; and where the pleurisy, whether symptomatic or accidental, is of the latent form. On the other hand, where the phthisis and the pleurisy are acute, puncture is not only useless, but hastens the transformation of the effused fluid into pus.

Sero-Sanguinolent Effusion. The presence of blood in pleural effusion is generally connected with cancer or tubercle of the pleura; hence an unfavourable prognosis must generally be pronounced, not only as to the issue of the malady, but as to the immediate result of the operation. There are, however, cases on record in which, even though the fluid has had a reddish colour, recovery, even rapid, has followed paracentesis; but in these the idea of pleural cancer or tubercle cannot, of course, be entertained. Although these favourable cases are rare, it is important to be able to recognize them. Independently of other circumstances indicating the absence of constitutional disease, they are distinguished, M. Marrotte thinks, from sanguinolent effusions symptomatic of organic lesion, by the small proportion of blood in the fluid. Sanguineous effusions connected with cancer or tubercle are generally more coloured, the presence of blood is more distinctly marked, and the fluid which escapes towards the end of the operation more or less resembles pure blood.

Chronic Serous Effusion. The results of paracentesis appear to have been generally unfavourable in cases of chronic effusion; and hence some reject the operation, without denying that cures are possible. Cases in which recovery has followed have been cited by M. Woillez; but our judgment is at fault, when we inquire when chronicity commences, what cases of chronic effusion are likely to receive benefit from puncture, and how they may be recognized. Chronicity has generally been defined according to the duration of the disease, rather than according to its progress and symptoms. But M. Marrotte observes, a distinction must be drawn between those cases where the disease is still active, and often ends in the development of tubercle or pus, and those where there is serous effusion, properly so called, the simple remains of the disease. Chronic pleurisy —that is, where the pleuritic process is still active—comes much more under the domain of medicinal treatment than of paracentesis.

Of effusions which are met with as the remains of pleurisy, some have followed more or less active inflammation, accompanied by the formation of plastic products which have become organized and have produced impediment to the expansion of the lung. In these cases, puncture will probably fail, if delayed for two, three, or six months; but, if the history of the case lead to the supposition that there has been acute dropsy of the pleura, or simple latent pleurisy—in both which the plastic products are small in quantity—there is a chance that the lung will expand on the evacuation of the fluid, although the effusion is of long duration.

Purulent Effusion. In regard to cases of this kind, M. Woillez has noticed two circumstances which have also occurred to M. Marrotte; viz., the readiness with which pleurisy passes on to the suppuration in children where it becomes chronic; and the frequency with which puncture with the trocar is followed in them by pleuro-cutaneous fistula. When empyema is present, the formation of a subcutaneous fistula, so as to allow the exit of pus, and the ultimate evacuation and contraction of the cavity without allowing the entrance of air, is much preferable to repeated punctures; although these have been followed by successful results in the hands of Legroux and Roger. M. Marrotte's recommendation has reference to children; but whether it will succeed equally well in the adult must, he observes, be determined by future experience.—*British Medical Journal*, Nov. 19, 1864, from *Bulletin Général de Thérapeutique*, August 30, 1864.

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32. *Femoral Aneurism cured by Digital Compression of the External Iliac Artery.* Dr. McGrath communicated to the Surgical Society of Ireland the following highly interesting case treated at the Military Hospital, Dublin :—

" Private Timothy Mullaney, 36th Regiment, ætat. 29, and of nine years' service, was admitted into the General Hospital, Dublin, on the 31st July, suffering from a large pulsating tumour situated in the upper part of the left thigh. The tumour was soft and fluctuating, and extended downwards from immediately below Poupart's ligament for about three and a half inches, and measured three inches from side to side. The pulsation was extremely violent, and attended with a loud *bruit de soufflet.* There was a considerable amount of constitutional disturbance, the pulse being full and rapid and the skin hot and dry. He complained of severe pain along the inner side of the thigh and in the groin. The patient, a strong, and, in other respects, perfectly healthy soldier, stated that on the day previous to his admission into hospital he had been employed on fatigue duties, and had to lift some heavy weights which required a considerable amount of muscular exertion. While on duty he experienced no sense of uneasiness, nor was he conscious of having sustained any injury. When relieved from duty, feeling tired, he went to sleep, and slept for about six hours, and on awaking felt a good deal of pain and numbness in the left thigh and leg, and for the first time noticed the pulsating tumor in the groin. The pain was so severe that it quite prevented further sleep, and during the greater part of the night he remained walking about through restlessness. He applied for medical assistance in the morning, and as his regiment was on the eve of departure for India he was sent for treatment to the General Hospital. On admission, he was seen by Staff-Surgeon Todd and Assistant Staff-Surgeon Kirwan (to the latter officer I am indebted for the greater part of the notes of the foregoing description). A bandage was put on the entire limb below the tumour and a truss with a pad of lint over the course of the external iliac artery, while to the tumor itself ice was kept constantly applied. Opiate draughts were also administered, and after some time he became more easy and slept pretty well during the night.

"On the next day (August 1st), Carte's large compressor was applied over the external iliac artery by Staff-Surgeon Todd. The pressure was so applied as almost to stop, but not completely, all pulsation in the tumour, a bandage was put on the limb as before, and opiates freely administered. From this date until the 15th of August pressure was kept up almost unremittingly, the patient bearing the pain and inconvenience caused by the instrument with the greatest possible endurance, but two small ulcers having been produced in the integuments in consequence of the pressure, it was now (15th August) obliged to be discontinued. In the meantime the only change produced in the tumour was, that it had become somewhat harder and more circumscribed, but the pulsation continued almost as violently as when he was first admitted. During the time the pressure was applied the man was frequently seen by Dr. O'Flaherty, Deputy Inspector-General and P.M. Officer of the Division, also by Surgeons Tufnell, Heffernan, and most of the medical officers of the garrison; and on the 16th August, in consultation with these gentlemen, it was decided that as the aneurism was not increasing in size, time should be given for the ulcers in the integuments to heal, when pressure should be again tried, and, if unsuccessful, ligature of the external iliac should be had recourse to. Meanwhile ice was kept constantly applied to the tumour.

"On the 7th of September the ulcers in the integuments having partly healed, and the irritation of the surrounding skin having to a great extent subsided, the tumour, however, remaining in almost the same condition as before, pressure was made with the finger over the course of the external iliac by relays of orderlies, each orderly controlling the artery for about five minutes at a time. In this way, under my superintendence, pressure was kept up for about five hours daily, and on the 15th of the month I had the satisfaction of finding that the tumour was gradually undergoing solidification, having become much harder, more circumscribed, and its impulse considerably less. On the morning of the 23d September (pressure with the finger having in the meantime been continued as before) no pulsation could be detected in the tumour; it returned, however, about noon, but was very slight. On the 4th of October, pressure being discontinued for the day, all pulsation was found to have ceased in the tumour itself, as also in the femoral, popliteal, and tibial arteries. For the last day or two, in addition to pressure over the iliac vessel, pressure was also made (with the finger) at the distal side of the tumour, and, as I am inclined to think, with much advantage."—*Dublin Med. Press*, Jan. 6, 1864.

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33. *New Method of securing the Pedicle in Ovariotomy.*—J. B. BROWN, Esq., read a communication on this subject to the Obstetrical Society of London, Feb. 1, 1865.

He observed that hitherto there had been three distinct methods of securing the pedicle: First, by ligature, allowing the ends to hang out, as practised by Dr. Clay, of Manchester (the pioneer of ovariotomy in this country, who had steadily led us on to our present successful results), and by Lane (the first surgeon in London who performed this operation) consecutively; secondly, by clamp, as first suggested by Hutchinson, and followed by many others; thirdly, by cutting off the ligature short and closing the wound, as first successfully practised by Rogers, of New York, in 1829, by Dr. Bellinger in America, in 1835, by Dr. Siebold, of Darmstadt, in 1846, and recently by Dr. Tyler Smith. The first three gentlemen's cases were all successful, and the last named gentleman has also had great success. Mr. Brown said that his objections to the first method had been the length of time required for the ligature to come away, which varied from nine days in his own practice to a month in that of others; to the second, the frequent severe pain caused by the dragging of the pedicle, or the pressure of the clamp itself; to the third, the unsuccessful results in his hands following its use. Having repeatedly used the actual cautery of late, employing Dr. Clay's instruments in burning adhesions off the omentum and elsewhere, he had been gradually led to the conclusion that the actual cautery might be employed in treating the pedicle itself. Consequently, on Dec. 28th, 1864, he tried it upon a patient of Dr. Burchell, of the Kingsland road, a lady forty-seven years of age, who had had three children, the youngest twenty-one years since. The disease was first discovered by Dr. Burchell in August last, and so rapidly increased as to lead Dr. Barnes and Dr. Tanner to recommend extirpation some short time before he (Mr. Brown) saw her. As the abdomen then was very large, the skin shiny, and the general health rapidly suffering, he performed the operation by Clay's large incision. There were many adhesions laterally and posteriorly, the bleeding from which was checked by the actual cautery; and finally the pedicle, being secured by a clamp, whilst a very large multilocular mass of cysts was removed, was thoroughly seared by actual cautery and allowed to drop. The wound was then closed in the usual way, and it healed in a week, the patient being convalescent in a fortnight. Mr. Brown thought that if this plan was found by repetition to be successful, it would very materially lessen the dangers of the operation, and consequently insure a greater number of recoveries.

Dr. Routh stated that Mr. Brown's previous and successful experiments in the removal of the omentum by a red-hot iron would prove the best reply to Dr. Tyler Smith, as to the probable conduct of the peritoneum where a pedicle was removed in the same manner.

Mr. Brown, in reply to several speakers, said that the objection urged by Dr. Tyler Smith, of the slough being injurious to the peritoneum, had been answered by the questions put by Dr. Routh and replied to by Dr. Greenhalgh; that he (Mr. Brown) had, for four years past, repeatedly used the actual cautery in burning adhesions and arresting hemorrhage, and in no one of the cases so treated had he had a death; and he thought that the objection ought not to deter others. He did not allude to the écraseur, because he thought there was not sufficient time in ovariotomy to use it safely; and he did not think it probable that it would ever come into use on that account. In answer to an objection that white heat might be detrimental, Mr. Brown said he did not go quite so far as to use white heat, but he stopped just short of it. To the objection of Dr. Parsons, that there was fear of hemorrhage in case of sickness after the use of the cautery, Mr. Brown replied that whilst it was well known that many patients had died from hemorrhage where the ligature was used, he did not think, judging from his past experience and the results of veterinary surgeons in spaying the sow, that there was any probability of hemorrhage where the cautery was steadily and thoroughly applied.—*Lancet*, March 4, 1865.

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34. *Spontaneous Dislocation of the Two Upper Cervical Vertebræ, with Complete Paralysis of the Limbs and Trunk, cured by Reducing the Dislocation.* By M. Maisonneuve.—Marie-Louise Paquotte, aged 16, suffering from white swelling of the atloido-axoidian articulation, of several months' standing, was admitted into the Hôtel Dieu, March 24, 1864. There was swelling of the suboccipital region, the head was inclined forwards, and there was slight numbness of the upper limbs. On the very day of her admission, in consequence of a

sudden movement of her head, the two upper cervical vertebræ were dislocated, and there instantly followed paralysis of all the limbs and the trunk. The diaphragm alone kept up the respiration.

Reduction was attempted by M. Maisonneuve, by placing one hand under the chin, the other under the occiput, and by then pulling up the head gently and continuously whilst the shoulders and trunk were held down by two assistants. In about half a minute a slight start and a very distinct friction-sound showed that reduction had been successfully accomplished. Sensibility and even motor power began to return almost instantly. Great care was taken to keep the head in proper position; the improvement increased, and on the following day the paralysis had almost entirely disappeared. Eight days later there was no trace of it left.—*Ranking's Abstract*, vol. xl., from *Gaz. Hebdom. de Méd. et de Chir.*, July 8, 1864.

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35. *Dislocated Cervical Vertebra Reduced Successfully.* By M. RICHET.—A boy twelve years of age was admitted into the wards of La Pitié, July 20, 1863, with an injury caused by direct violence, and had induced symptoms of paralysis, caused by undue pressure on the brachial plexus at the emergence of the nerves from the intervertebral foramina. In order more closely to investigate the case, M. Richet, with the assistance of his colleague, M. Gosselin, placed the boy under the influence of chloroform, and ascertained that spasmodic contraction of the muscles had some share in the inflexion and rotation of the head, to which various movements were readily imparted during anæsthesia. After having thus thoroughly satisfied themselves of the correctness of the diagnosis, the surgeons proceeded as follows to the reduction of the displacement.

Counter-extension was applied by means of a sheet folded lengthwise, running behind the neck, and firmly secured to the foot of the bed. Two assistants, grasping the patient's head at the back and beneath the lower jaw, performed extension, and M. Richet placed his own hands over those of the assistants, not for the purpose of increasing only, but also of directing the tractive power. He at first inclined the head towards the right shoulder, in order to liberate the inferior articular process, which he supposed to have passed over the superior process of the subjacent vertebra, forcibly rotated the head from right to left, in a direction opposite to the deformity caused by the accident, and concluded the operation by turning the head and neck directly backwards.

During these manipulations, M. Gosselin exercised lateral pressure on the cervical column, and endeavoured to push back the displaced vertebra into its normal situation.

The operators proceeded with the greatest caution and deliberation, and they already fancied that the straightening had made obvious progress when they became simultaneously aware of a sudden jerk; M. Richet, somewhat alarmed, immediately caused all effort to be discontinued, but soon ascertained with much gratification that the inflexion of the spine and the deformity of the neck had almost entirely disappeared. The child's face was now directed forwards, the chin occupying the mesial line, although the head remained almost imperceptibly bent forward.

The case has since progressed most favourably, all signs of paralysis have disappeared, and, with the exception of slight deviation of the head, which may depend on some degree of arthritis, occasioned by the unavoidable efforts used during the reduction, the child is doing well.

It is true that, in the present instance, it was highly desirable to relieve the paralysis of the arm and thoracic walls by reducing the dislocation, but nevertheless the very hazardous operation which terminated in so satisfactory a manner was instituted with great caution and only after much hesitation. The exhibition of chloroform proved extremely useful; thanks to anæsthesia, the anatomical condition of the parts was carefully inquired into, and it became possible to dispense with any violent tractive efforts, which the powerful contraction of the numerous muscular structures which surround the spine would otherwise have rendered necessary.—*Ranking's Abstract*, vol. xl., from *Journ. de Méd. et Chir. Prat.*, Aug. 1864.

36. *New Procedure for the Reduction of Dislocation of the Head of the Humerus beneath the Coracoid Process.* By M. A. SALMON.—This method, in which the slowness of the procedure is the principal characteristic, is founded upon the precept laid down by Dupuytren, viz., that in order to overcome muscular resistance, it is necessary to proceed with the greatest gentleness and precaution, and to persuade the patient that the operator's intention is merely to examine the injured joint.

The patient should lie down, the side on which the dislocation exists extending beyond the bed, the injured arm being supported by an assistant. The surgeon grasps the forearm and hand, and very slowly raises the limb from the side, discontinuing his efforts when the slightest pain is complained of, and gently chafing the muscles of the shoulder. This period of the operation may occupy from ten minutes to a quarter of an hour.

During this interval the dislocated arm is gradually moved from the body, and finally raised straight up to the head, when reduction may be easily accomplished in the following manner:—

The raised arm is intrusted to an assistant, who supports it without effort in its new position, while the surgeon, placing himself on the inner side of the limb, fixes the scapula by applying his hands over the shoulder, and with both thumbs gently pushes back the head of the bone into the glenoid cavity, slight traction being at the same time exercised, if necessary, by the person who holds the arm. The limb is restored to its natural position when the bone has been replaced. The operation is thus brought to a conclusion in a perfectly painless manner, and without the patient being even aware of the fact.—*Ranking's Abstract*, vol. xl., from *Journ. de Méd. et Chir. Prat.*, Nov. 1864.

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37. *Bony Anchylosis.*—Mr. B. E. BROADHURST read a paper on this subject before the Western Medical and Surgical Society (Dec. 2, 1864). He gave the details of a case of bony anchylosis of the hip-joint, in which the neck of the thigh-bone was cut through to form a false joint. Cases of bony anchylosis are rare. When of the hip-joint the patient is very helpless, and can only move by the aid of crutches. He is less helpless when any other joint is affected. The propriety of interfering with bony anchylosis of the knee or ankle-joint may be questioned, but in the case of the hip and the elbow-joint it is of great importance to give the patient a chance of renewal of motion, even where motion would seem to have been hopelessly lost. In operating it is important to divide the bone as near as possible to the articulation. In the elbow a wedge-shaped piece may be taken from the centre of the articulation; and in the hip the neck of the femur may be divided just below the head of the bone. The divided ends of the bone may then be scooped out, so that both surfaces shall be concave. There is difficulty in retaining motion in these cases, so strong is the tendency for bony union to occur. A swinging limb need never be feared. If the action of the muscles cannot be gained, reunion by bone is certain to take place. It is important, therefore, to divide the bone in the most favourable position for the action of the muscles, and that point must be the nearest possible point to the articulation itself. In these cases we have to deal with tolerably healthy structures, and hence it is that the tendency to repair is strong in them. The muscles, too, which formerly moved the limb are somewhat altered in structure, and through disuse they will have lost power. It will require, therefore, for a lengthened period both patience and fortitude to gain fair muscular power after bony anchylosis has once become fully established. *Case.*—A. M., aged 23 years, suffered from bony anchylosis of the left hip. When she was 10 years old she met with an accident, through which inflammation was excited. She continued to walk, however; no attention being paid to the limb for many months. She limped as she walked. The limb swelled; an abscess formed, and continued more or less to discharge pus, with portions of necrosed bone, for ten years. Pain and abscesses at length ceased, and the limb became motionless. The author first saw the patient in 1862; she was in fair health. The question simply was: Could motion be given? Anchylosis had taken place without dislocation of the head of the femur occurring. The neck of the bone was in part absorbed. The limb was shortened one inch and a-half. The pelvis was rendered oblique—

apparently increasing the shortness of the limb by two inches. She had during the previous year walked with crutches, and worn a boot which was raised three inches in the sole. The case appeared favourable for operation, and it was thus performed: An incision three inches long was made, commencing over the head of the femur, and passing to the outer side of the great trochanter; from the upper angle of which another incision extended inwards for two inches. The neck of the bone was divided, and the ends gouged out as before described. The flesh wound healed almost by the first intention. Movement of the limb was attempted when the cicatrix had formed, but it was difficult, and so painful, that without chloroform it could not have been borne. This passive motion was, however, continued, and at length the limb moved readily, and even some voluntary motion was gained, so that the patient could flex the limb to a right angle. After six months she could rotate the limb outwards, and sit down at ease. The pelvic obliquity was easily removed; the horizontal position being in itself almost sufficient for this purpose; and the foot was consequently brought by so much nearer to the ground. A steel support, with joints opposite to the hip, knee, and ankle, was fitted to the limb; and the buttock was supported by a leather shield. With this instrument, and a couple of sticks, the patient moved about easily. The operation has now been done two years. There is no lack of firmness about the hip-joint; but, on the contrary, it requires constant exercise to keep it free. The patient now walks without the instrument, and with one stick for support.—*Med. Times and Gazette*, Feb. 4, 1865.

38. *Lithotrity an Eminently Successful Operation.*—Mr. HENRY THOMPSON, Surgeon to University College Hospital, in order to show that lithotrity is an eminently successful operation, adduces (*Lancet*, Feb. 25, 1865) his own personal experience of the operation during the year 1864. He gives a brief statement of every case, nineteen in number, in which he has performed and completed lithotrity during that year.

"This list comprises eighteen adults, all relieved of stones, of which but a few were small. One patient only died, and certainly not as a direct result of lithotrity, but of renal disease and renal calculus, after having recovered from the primary effects of the operation. Of these eighteen adults, the youngest was forty-five years old, the eldest seventy-five years; the majority were above sixty-two years; four were seventy and upwards; and the average age of the whole number is also, as nearly as possible, sixty-two years. No one, I presume, will imagine that for these cases the operation of lithotomy would have afforded results in any way comparable; nevertheless many of the stones were of considerable size.

"I venture to add that, in my opinion, the success of lithotrity depends upon the method adopted. During a considerable period of the history of that operation its results were undoubtedly inferior to the results of lithotomy in average hands; and if the same method be still employed, no better results can be expected."

Mr. T. proposes at an early day to offer a few remarks on what appears to him to constitute the safe and successful practice of lithotrity.

39. *Irrigation in the Treatment of Penetrating Wounds of the Knee-Joint.*—Dr. WM. NEWMAN published in the *British Medical Journal*, for June 27th, 1857, an account of five cases of penetrating wounds of the knee-joint, successfully treated by irrigation, and in the No. of the same journal for Dec. 3d, 1864, he relates three more cases equally successfully treated by the same means.

"If cold," he observes, "be the appropriate remedy for any surgical affection, it is but a bare truism to maintain that it should be applied effectually. If this, then, is to be done in the case of some acute inflammation—of a joint, for example—the constant presence of an attendant will be imperative, who may apply thin coverings moistened with some frigorific or evaporating lotion to the part affected, and change these coverings at very frequent intervals, as they become either warm or dry. But to speak of such procedures as available or possible in everyday surgical practice would be absurd. How is cold, then, applied? Usually, a lotion is prescribed, and some material soaked in this is applied to the seat of injury. More frequently than not, and despite distinct orders, some three or four folds of material are used; thus more lotion is taken up, and the attendant's trouble is proportionally diminished. But the result is precisely the opposite to that desired by the surgeon—the surface of the cloth very speedily steams with moist vapour, while the deeper layers are reservoirs of moist heat; practically, indeed, a poultice is concocted, without the efficiency of that time-honoured compound, and this, too, employed under conditions where warmth and moisture are not desired.

"This may be an extreme view; but I, nevertheless, claim for irrigation, or water-dropping, advantages which do not attend on the most careful employment of cold in the more ordinary forms. It is easily arranged; when once put in order, it is self-acting, even for hours; it is cleanly and effective. The absence or stupidity of an attendant will not interfere with the application; and for its employment, no appliances are needed other than may be found even in the poorest cottage.

"A reservoir of water (iced, if possible), a jug, or some other convenient vessel, may be hung to some hook in the ceiling; tied to the frame of a bedstead; or, more elegantly still, attached to a suitable stand.

"The distance, from the injured part, of the water-supply, should not be less than three or four feet. If time be a great object in the treatment, or the symptoms of local injury be severe, a more speedy effect will result on the placing the jug at a greater distance above the bed on which the patient lies.

"A few threads of lamp-cotton or Berlin wool, a narrow shred of flannel, or a strip of lint from the pocket-case, may do duty as a syphon. First well-soaked in water, the shred must be so placed that one end lies at the bottom of the jar, while the other one hangs outside at a lower level. A continual dripping will so be kept up until the cistern is exhausted.

"The injured part should be kept immovable; the knee-joint should be fixed by a back splint sufficiently long and well padded, this being kept in place by a figure-of-8 bandage. The turns of the bandage must not be too tight, for, when wetted, the material shrinks very perceptibly; nor is it necessary to cover the joint itself with the folds. From hip to ankle the limb should be thoroughly supported; and, to insure this, the patient should be kept in bed. Waterproof sheeting, or an oil-cloth covering from a table, should be stretched beneath the limb, so as to prevent the wetting of the mattress; and, by adjusting this covering, a channel may readily be made, so as to direct the waste water into some dish placed on the floor.

"Next, as to the time during which this mode of treatment may be carried on. I have continued the dropping uninterruptedly for eight or ten days more than once, and without ill result; then, intermitting the flow for an hour or two at a time, I have continued the same plan for a second similar period of time—three weeks in the whole. The time usually employed is about seven or eight days; and this may be extended or shortened, according to the special requirements of each case.

"There seems to be little if any advantage from the addition of pharmaceutical compounds to the water in the jar. Possibly, when the rapid exhaustion of heat from the damaged part is a matter of importance, it would be well to add some spirits of wine to the water; or even the hydrochlorate of ammonia or nitrate of potash might be of some benefit. The instances (one or two) in which I have used some such salt, have not impressed me with any decisive idea of increased good.

"In the hot weather of summer, I have been glad to resort to the use of ice; adding this to the water in the jar, so as to reduce the temperature much below that of the surrounding atmosphere.

"The good effects which follow the persevering use of irrigation have seemed to me to depend far more on the constant evaporation of the thin layer of fluid which spreads itself over the injured part, than on the exact temperature of the water employed, or on any qualities which may have been obtained from its admixture with other substances, frigorific or sedative.

"This mode of application of cold should be used more to prevent than to arrest inflammation; to bar the development of increased vascularity, with its subsequent bad results, rather than to procure the removal of this morbid condition, once established. Hence the rule, that irrigation should be used as speedily as possible after the injury has been inflicted. When so applied, the conditions of heat, swelling, and pain will not appear; and this good result is probably to be attributed both to the sedative influence of the cold on the cutaneous nerves, and to the diminution, from the same cause, of the absolute amount of blood circulating in the capillary vessels in and around the joint. Not, however, that the occurrence of actual inflammation in an injured joint should prevent the surgeon from resorting to this most effective means of reducing the abnormal temperature. The first case noted in this paper sufficiently proves its usefulness under such conditions. Still, if irrigation be used for the first time in the second stage, the good effects will be less speedy, more slowly evident; and certain subsequent changes in the affected textures must be expected to occur—thickening, stiffness in movement, etc.

"Even under these less favourable secondary conditions, I incline to believe that irrigation has a material advantage, in comparison with the more ordinary plans of treatment. Cases may well happen in which the immediate local abstraction of blood will appear to be indicated, if only with the intent of relieving the pain of intense local congestion; but, after this, the use of cold would again be available."

40. *Effects of Common Water on Wounds and Ulcers.*—Prof. WEBER of Halle gave a lecture before the late meeting of the Association of German Naturalists and Physicians at Giessen, on this subject. He thought water was by no means an indifferent agent, and should be substituted by milk, vegetable resinous extracts, or, best, a solution of common salt in water of a certain degree of concentration. In such salt water he had let patients bathe chancrous sores with the best effect; ulcerations on the feet he had kept for a long time in such solutions, and cured them; nay, he had performed thoracentesis upon two patients while they were immersed in a bath of such salt water, and cured their empyema. In the clear salt water, it could be seen how at the expiration the thick pus issued through the wound, and how at the inspiration the salt water entered the thorax and washed out the pus.—*British Med. Journ.*, Nov. 5, 1864.

41. *Efficacy of Phosphate of Lime in Periostitis.*—The *Journal de Chimie Médicale* relates two cases of osteitis, attended with intense pain, in which Professor PIORRY resorted with much benefit to the exhibition of phosphate of lime.

In one patient the tibia and humerus were the seat of a circumscribed tumefaction and severe nocturnal pain. On superficial examination, the osseous structures seemed to have preserved their natural consistency, but plessimetric percussion of the affected parts betrayed a loss of elasticity, and an increased sonorousness of the bones. The precedents of the case being of a nature to indicate the presence of the syphilitic taint in the system, the Professor prescribed half a grain of protoiodide of mercury night and morning, fifteen grains of iodide of potassium three times a day, and the application of anodyne poultices. This treatment was steadily persevered in for three weeks, but the pain continued with unabated violence, when Mr. Piorry, taking into account the swollen and softened condition of the bones, conceived that a couple of drachms of phosphate of lime exhibited daily, concomitantly with the iodide of mercury, might possibly prove advantageous. This treatment was therefore instituted, and the issue of the case justified the Professor's surmise. In the course of forty-eight hours the osteoscopes had much decreased, and disappeared altogether after an interval of a week. The patient being at the same time an anæmic subject, with a small heart, contracted liver, and a weak pulse, which failed when the arm was kept in a raised attitude, tonics and a generous diet were likewise resorted to.

The second patient complained of excruciating pains in the left temporal region, which were at first attributed to neuralgia of the fifth pair of nerves, and treated accordingly, but without benefit, by the application of blisters dressed with morphia, and belladonna and opium internally. On closer inspection, Mr.

Piorry discovered on parting the hair, which was very thick, and concealed for a time the true nature of the case, a considerable periostic tumour at the base of the parietal bone. In this instance also the plessimeter revealed more sonorousness and less elasticity than on the opposite side of the head. The patient, however, contended, and nothing in her previous history disproved her affirmation, that she had never been affected with any symptom of venereal disease. A drachm of phosphate of lime was exhibited night and morning, and the pains decreased in the course of four days, and in a short time an entire cure was effected.

In both these cases, the reader will observe that the plessimeter was used to discover the softening of the bony structures, and that in the patient whose previous history pointed to syphilis, the use of the calcareous phosphate was in nowise incompatible with the administration of mercurial preparations. We may further add, with the editor of the *Journal de Chimie Médicale*, that the appropriate salt of lime is the combination obtained by the precipitation by ammonia of a solution of the phosphate in muriatic acid; the deposit should be carefully washed, and preserved in a humid condition.—*Glasgow Med. Journ.*, July, 1864, from *Journ. Pract. Med. and Surgery.*

42. *Local Employment of Iodine in its Pure State in the Treatment of Inflamed Scrofulous Cervical Glands, and of Inflamed Inguinal Glands from Syphilis.*—Dr. Prieur has addressed to the Imperial Academy of Medicine a memoir on this subject, of which M. Ricord reports in favourable terms. The proceeding consists in applying to the enlarged glands laminæ of iodine, inclosed in a layer of wadding, where they are rapidly vaporized under the influence of heat. The iodine ought to be spread as uniformly as possible, over the half to a third, or a quarter, of the thickness of the wadding, which should be covered or fringed with a leaf of gelatine, the circumference of which adheres to the skin, and concentrates the iodine vapours to a determinate point. The apparatus is left in its place for from twenty-four to forty-eight hours, and the result is a phlyctena filled with a thick purulent or bloody serosity. Dr. Prieur states that he has treated in ten years about one hundred and twenty patients by this plan, and has thus caused the disappearance of more than three hundred swellings. M. Ricord, in reporting on the paper, regrets that in speaking of the inguinal swellings, the author of the memoir has not specified whether he treated inflamed glands symptomatic of infecting chancre, or simply buboes sympathetic of the soft chancre, or even virulent buboes. But the inguinal region, like the neck, is the chosen seat of strumous swellings, and often a chancre or blennorrhagia is only the occasion of the development of these enlargements. M. Ricord has himself tried the plan of Dr. Prieur in eight cases of well-marked scrofulous adenitis, and the results he has obtained have been confirmatory of the success of the treatment.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865, from *Comptes Rendus de l'Acad. de Méd.*, Sept. 1864.

43. *Use of the Drainage Tube, for the Removal of Fluids effused in the Cavity of the Pleura.*—Dr. Geo. H. Kidd offers (*Dublin Quarterly Journ. Med. Science*, May, 1864) some interesting observations on this subject, and presents the following practical deductions:—

1. That the drainage tube may be introduced into the cavity of the pleura with safety, and that in suitable cases it is a most efficient means of treatment.

2. In empyema, the result of acute or chronic pleuritis, it appears to be most useful; and in cases where the fluid in the pleura has been ascertained to be purulent the sooner the tube is introduced the better is the prospect of a cure, both because a portion of the lung may yet expand, and because the strength of the patient has not been exhausted.

3. In cases where, on tapping, the fluid is found to be serous, it is better not to introduce the tube in the first instance, as the fluid may not reaccumulate; but, if the fluid reaccumulate quickly, producing much distress of breathing, the plan of drainage claims to be considered, and the case of the boy Hill, recorded by Dr. Banks, affords great encouragement in recommending its use.

4. Where a fistulous opening exists in the wall of the thorax, but the dis-

charge does not escape freely—the retained portion becoming decomposed—the making of a counter-opening at the lowest part of the cavity, and introducing a tube, is shown by the first of Dr. Goodfellow's cases, and the one recorded by Dr. Gordon, to be highly advantageous.

5. In cases of hydro-pneumothorax, such as Dr. Goodfellow's second case, and Dr. M'Dowell's, the introduction of the tube may not only palliate the sufferings of the patient, but prolong life.

6. The removal of the tube must not be attempted so long as pus continues to be secreted; but when this has ceased the tube may be withdrawn as shown by Dr. Banks' case, Dr. Gordon's, and by that of Mrs. J. A. M., now recorded. When the tube seems to be keeping up the discharge, we may, by inserting silk threads, keep the opening patulous, so as to allow fluids to escape; and, at the same time, retain in our hands the means of reintroducing the tube with facility if the necessity for it should occur. The number of threads need not be great, and may be gradually reduced. The boy Hill had but a single thread in the opening for many months.

The introduction of the tube is a very simple operation. An opening is made with a scalpel at the usual place for tapping, between the fifth and sixth ribs, about midway between the spine and sternum. An instrument is now to be passed in, and the cavity explored; it is then made to press against the intercostal space at the lowest part of the cavity, and is easily detected by the finger placed opposite to it, when it is cut down upon with a scalpel. * * * In my case I used a uterine sound. The broad handle of this instrument, and its firmness, enabled me to explore the cavity satisfactorily, and to make sufficient pressure on the intercostal space to guide the knife in cutting down on it. Having passed it through I secured a ligature on it, which the bulbous form of its point held securely while I withdrew the instrument. I then attached the tube to the ligature, and easily drew it through the opening. In the case I saw Dr. M'Dowell operate on recently, he used the same instrument. The curved trocar of Chassaignac might be used in the operation, but it appears to me to be very inferior to the uterine sound. After its introduction it is necessary to withdraw the trocar, leaving the canula in the wound, and reintroduce it with the blunt end foremost, to explore the cavity; then having fixed on the place for making the counter opening, the trocar must again be withdrawn and reversed; and, unless the instrument is very much better made than any I have seen, this cannot well be done without shifting the canula out of the position that had been decided on; and even if this difficulty be overcome, there is considerable danger of injuring the intercostal artery in perforating the wall of the thorax from within outwards, as it lies in an exposed situation on the inside of the rib.

The tubes sold in the shops are of two kinds, vulcanized rubber and pure rubber. The vulcanized has no advantages, as the temperature of the body is quite enough to keep the pure rubber elastic at all times; and if the tube has to be worn for any length of time the vulcanized rubber may become brittle, as it usually does when long in use. The tube ought to be shifted occasionally, lest the openings should be closed. In my case, I placed the ends of the tube in a small waterproof sponge-bag, slung round the shoulders, and fastened close to the openings by a slip of adhesive plaster, which, being attached to the skin at one edge, and to the inside of the bag at the other, served also to direct the current into the bag.

44. *Pyæmia.*—The *Medical Times and Gazette* of January 7, 1865, contains a tabulated report of ten cases of pyæmia which occurred in King's College Hospital during the year 1864, and the number of the same journal for Jan. 21 contains one of thirteen cases which occurred during the same period in St. George's Hospital, all twenty-three cases terminating fatally.

45. *Diagnosis between Syphilitic and Non-Syphilitic Diseases of the Skin.*—An abstract of a paper on this subject, by Mr. B. SQUIRE, was read before the Harveian Society of London (Nov. 3, 1864). The author, after remarking on the importance of the subject observed that an eruption, even when the question

of antecedent primary syphilis was well made out, was by no means necessarily of syphilitic origin; and that where an eruption was clearly syphilitic, it was often extremely difficult to obtain a history of primary syphilis. He, therefore, placed very little reliance on inquiries of this kind as a means of diagnosis. The best evidence that we could obtain of the nature of an eruption was the evidence that was within our personal knowledge. The most reliable direct evidence of previous chancre was the cicatrix left by that chancre. One of the most important means of distinction between syphilitic and non-syphilitic eruptions was the situation of the eruption. The most frequent situations for syphilitic eruptions, in the order of their frequency, were the neighbourhood of the alæ of the nose, the angles of the mouth, the forehead near the roots of the hairs, the back of the neck near the roots of the hairs, the inner canthus of the eyelids, the middle of the chest, the inner surfaces of the limbs, the neighbourhood of the axillæ and groins. It might be stated generally that the face was the most favourite locality for syphilitic eruptions. The age at which syphilides most commonly appear for the first time was another means of diagnosis. The most common age for this was between 25 and 35. Infantile syphilis appeared generally at the age of one month. The earliest time at which the author had met with a syphilitic eruption dependent on syphilis communicated by intercourse was in the case of a female aged 8 years. The colour of the eruption was a favourite, but, unless under certain restrictions, a fallacious means of diagnosis. He meant that the notion that a coppery tint would enable one to distinguish syphilitic from non-syphilitic eruptions was an erroneous one; this tint was found more or less marked in every case of non-syphilitic psoriasis. Again, syphilitic eruptions did not present it at all at their outset; it was only as they became developed that the coppery tint gradually appeared. The form of the eruption was a more reliable means of diagnosis. Most commonly this was annular or oval. If not in actual rings, the eruption formed segments of circles—incomplete rings; or by the juxtaposition of two rings, it might form figures of eight. This, of course, however, would not enable us to distinguish, as by a touchstone, syphilitic from non-syphilitic eruptions. Psoriasis, *e. g.*, sometimes occurred in rings; so did lichen; so, again, did herpes circinatus. Lupus was another example of a non-syphilitic eruption of annular form. The absence of itching and smarting was a peculiarity which would often aid in the recognition of a syphilide. The mixed character of syphilitic eruptions was another means of distinguishing them. Thus, in an eruption that was not syphilitic, it was rare to find rashes mixed with vesicles, or pustules with scales. Not so in a syphilide. What might be termed the "products of the eruption"—such as the scales or the crusts—were a means of diagnosis. The scales of a syphilitic eruption were finer, smaller, and more adherent to the surface beneath than those of a simple squamous disease. The scaly patch, too, was circumscribed by a whitish border, to which great importance had been attached by Biett as a diagnostic symptom. This whitish border was the result of the separation of the epidermis from the cutis around the diseased patch. The crusts, which might either follow the scales or succeed to pustules, were much harder, thicker, and greener than the crusts of a simple cutaneous disease; they were sometimes, at all events at their centre, as thick as they were broad. The ulcers that were left by either pustular or tubercular syphilides were generally circular, with abrupt and perpendicular edges, and a gray pultaceous floor, the skin around them having a copper tint. The scars left by a syphilide, though at first of a violet hue, soon acquired even a more tawny-brown tint than the eruption that had preceded them; this tint in its turn at length faded, but even when the scar had at length been left perfectly white, its annular or reticulated form, as the case might be, would distinguish its origin. Another means of recognizing a syphilitic eruption was attention to other changes produced by syphilis besides those wrought in the skin itself. With regard to the sore-throat, we should be on our guard against relying too much on it as a diagnostic symptom. There were many diseases of the skin (and some that resembled pretty closely one or other of the syphilides) that were dependent on scrofula, or, at all events, occurred more frequently in the scrofulous than in any other constitution. No people were more liable to sore-throats than the scrofulous, and perhaps no two diseases were more frequently confounded together than syphilitic lupus and the lupus that occurs in the scrofulous. In doubtful cases the question "Have you suffered from sore-throat?" is often allowed to settle the difficulty. The most characteristic condition of a syphilitic sore-throat was either the presence of mucous tubercles or of cicatrices. The presence of mucous tubercles, either in the throat or elsewhere, was one of the most conclusive signs of syphilis that one could have. The erythema of the buttocks and scrotum, that was so common in sickly children whose cleanliness was hardly attended to, was often mistaken for infantile syphilis, and if they happened to have a cold at the same time, it was still more likely to be set down to a specific cause. This mistake happened the more commonly that simple erythema in infants, as it faded, often assumed more or less of a tawny tint. The effect of the common remedy for infantile syphilis—gray powder—on the other class of cases, was greatly to aggravate them. Again, the author had frequently seen severe cases of eczema in infants taken for infantile syphilis, and treated for it with the same unfavourable result. There was no better or surer means for establishing the disease to be syphilitic than the existence of mucous tubercles when these were present, and in the majority of cases of infantile syphilis they were. Their most common situations were, the angles of the mouth, the alæ of the nose, the vulva, the anus, the scrotum, or within the mouth. The author then referred to rheumatic pains in the limbs, along the bones, or in the larger joints, to bitemporal neuralgia, to falling off of the hair, to indolent swellings of the glands of the neck, and, in the female, frequent abortion, or stillbirths, or suspension of the catamenia (not arising from any other ascertainable cause), as evidences of the syphilitic nature of an eruption, and to the chronic course and the progressive changes in the character of the syphilides, observing, however, that it was not upon any one symptom alone, but on the general issue of the evidence afforded by many symptoms, that we should rely for our diagnosis of syphilides from the other diseases of the skin. He concluded by expressing his regret that the limits of a paper precluded his entering on the much larger subject of the diagnosis of the different syphilides from the several diseases of the skin for which they might be taken.—*Med. Times and Gaz.*, Jan. 28, 1865.

OPHTHALMOLOGY.

46. *Extraction of Soft Cataract by Suction.*—Mr. T. PRIDGIN TEALE, Jr., of Leeds, states (*Lancet*, Sept. 24, 1864) that the difficulty sometimes met with in certain cases of linear extraction of cataract in which the soft matter is removed either incompletely or only after repeated introduction of the curette, induced him to try whether suction might not be employed in withdrawing through a small incision in cornea cataracts which have neither a hard nucleus from old age nor have undergone calcareous degeneration. Having satisfied himself that the softer portions of even a healthy lens could be sucked through a fine tube, he had a suction instrument modelled upon the ordinary curette. His original instrument consisted simply of a tubular curette fixed in a handle, to which a small India-rubber tube[1] with a mouth-piece is attached. The flexible tube is of such a length as to reach from the mouth of the operator to the curette when held in the eye.

Shortly afterwards Messrs. Weiss made, at the suggestion of Mr. Bowman, a modification of this instrument, in which the suction power is applied by an ingenious mechanism in the handle, so that the hand which holds the curette controls the suction. Mr. Bowman also inserted a piece of glass tube between the curette and the handle, to enable the operator to watch the result of the suction. Several modifications of this instrument have been made by other operators.

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[1] The idea of the flexible tube was probably suggested to me by reading an article by Mr. Greenway, of Plymouth, in which he describes a suction instrument for making artificial pupil.

Mr. Teale's operation, which is a modification of linear extraction, is performed as follows:—

"First stage: *The efficient rupture of the anterior capsule.*—The pupil having been dilated by atropia, and the eyelids fixed by the stop-wire speculum,[1] the anterior capsule of the lens should be very freely torn open by two needles passed through the cornea from opposite sides. In carrying out this step the surgeon should bear in mind that its object is not merely to liberate the cataract, but also to insure such a tearing up of the anterior capsule that it may curl back from the area of the pupil and be lodged behind the iris. At the same time he ought by all means to avoid injuring the *posterior capsule:* a caution to be especially remembered in cases where the cataract is dwarfed and the anterior capsule tough, or where, in traumatic cataract, the lens has been much reduced in bulk by absorption. If the operator wishes to avoid the use of the two needles, he may rupture the capsule at a later stage by introducing through the corneal opening made for the curette the hook used in extraction of hard cataract. The two needles, however, give more perfect command over this important step in the operation.

"Second stage: *The opening in the cornea.*—Having withdrawn one needle, and steadying the eye by means of the other, the operator should next make an opening in the cornea for the admission of the tubular curette of the suction instrument. For this purpose a broad needle has been made for me, by Messrs. Weiss, of such a breadth as to make an opening of the exact size required for the curette. The needle should enter the cornea opposite the margin of the pupil when fully dilated, and, passing somewhat obliquely through the laminæ of the cornea, should make a valvular opening, in order, firstly, that it may not be too central and leave a scar in front of the pupil; secondly, that it may not be too near the attached margin of the iris, and thus favour its prolapse and adhesion to the wound; and thirdly, that the curette, when introduced, may not rest upon nor bruise the iris.

"Third stage: *The removal of the cataract by suction.*—Having carefully introduced the curette (if it hitches in traversing the corneal wound, it may easily be disengaged by being turned edgeways), the surgeon should hold the open end of the tube steadily within the area of the pupil, gently burying it in the opaque material. The suction power may then be applied, and regulated in degree as the opaque matter runs off into the tube. As soon as the pupil is clear, the curette may be *carefully* depressed towards the posterior capsule in order to ascertain whether any opaque matter remains, but it should not on any account be swept before or behind the iris. If the suction be continued after the opaque matter has been removed, the cornea is drawn down over the open end of the curette, and blocks it up, thus preventing the iris from being sucked into the instrument and injured.

"If the operation has been efficiently performed, it will be found that the cataract has been completely withdrawn from the eye, through an opening in the cornea no larger than would admit the common curette, without any injury to the iris, without rupture of the posterior capsule, and with such complete division of the anterior capsule that it has disappeared completely behind the iris. It will be also found, I think, in the majority of such cases, that recovery is most speedy, that the operation is followed by little or no irritation of the eye, that the patient on the eighth or tenth day can read No. 1 (Jäger), and that the conditions which usually produce opacity of the capsule have been provided against.

"The foregoing rules apply to a simple case of complete soft cataract. They are also applicable, with slight modification, to cases of traumatic cataract of recent occurrence. In these cases, however, it is necessary, in the first place, to be very careful to tear open completely the anterior capsule which may have been previously ruptured in the accident producing the cataract; and, in the second place, to bear in mind that the posterior capsule may also have been torn through. Should this have occurred, the suction operation will be complicated by the admission into the anterior parts of the eye of the vitreous humour, which would tend to pass through the tube more readily than the denser material of the cataract. When such a defect occurs, it is sometimes possible, by careful management of the curette, to withdraw the opaque lens without at the same time drawing off a serious amount of vitreous humour.

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[1] Ophthalmic Hospital Reports, vol. iv. part ii. p. 141.

"Another complication may arise—namely, partial cataract, in which the nuclear portions of the cataract are opaque, and the cortical portions are healthy, tenacious, and adherent to the capsule. This difficulty must be met in the same way as in 'linear extraction'—by the preliminary operation of puncturing the anterior capsule, so as to admit the aqueous humour into the structure of the lens, and so to cause its disintegration. It may be possible to withdraw by suction even a partially sound lens without the preliminary disintegration; but I have not yet attempted to do so, not from any difficulty in drawing such healthy lens through the tubular curette, but because, when the peripheral parts of the lens are transparent and adhere to the capsule, it is hardly possible to ascertain when the capsule has been completely cleansed from lenticular matter.

"Another class of cases presenting difficulties is that in which a soft cataract has become wasted and calcareous, or partly so. In such cases the solid portions will not pass along the tube of the curette."

[Mr. T. is aware that the idea had been previously acted on, especially by Laugier and by Blanchet, but his method is evidently an improvement upon theirs, though we think Shuft's spoon or some of the modifications of it will be found preferable to the suction curette for the removal of the lens.—ED.]

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47. *Pulsating Varix of the Ophthalmic Vein.*—On March 10th, 1863, J. L., a female aged 32, was admitted into the Hôtel Dieu at Rennes, under the care of M. AUBRY, with a tumour in the orbit. She had no recollection of having been struck on the head; and the tumour was said to have become developed, without apparent cause, after an attack of typhoid fever which she had four years previously. On admission, her face was congested and puffed up, and she had a somewhat stupefied appearance. The globe of the right eye projected, but the functions of the organ were not impaired. At the inner part of the upper eyelid there was a tumour of the size of a hazel-nut; it was subcutaneous, and the colour of the skin was unchanged. Farther inwards, between the nose and the eyelids, was another tumour, divided into two parts by the tendon of the orbicularis muscle. Its upper lobe measured about half an inch vertically and one-tenth of an inch in breadth; the lower lobe lay in front of the lachrymal sac, and simulated a lachrymal tumour. The tumours were soft and fluctuating; they disappeared on the least pressure, and immediately reappeared when it was removed. On laying the finger very gently on the tumours, pulsation isochronous with the arterial pulse, and a very manifest *frémissement*, were perceived. On applying the ear over the palpebral region, there was heard a very distinct souffle, presenting intermissions isochronous with the ventricular systole; it was gentle and prolonged, and might perhaps be better described as a continuous souffle, intensified by each beat of the heart. M. Aubry, and several of his professional colleagues, arrived at the conclusion that the tumour was an aneurism of the ophthalmic artery. On March 7th, after feeling ill for two days, the patient died almost suddenly.

On *post-mortem* examination, all the organs were found healthy, except the encephalon and the skull. The entire portion of the cerebral hemispheres lodged in the middle lateral fossæ of the base of the skull was very much softened. The walls of the skull were much thicker than in the normal state; the vascular furrows were deep and large, and the cranial walls were very vascular. The skull presented a remarkable deviation in form. Behind the posterior edges of the lesser wings of the sphenoid bone, the configuration was normal; but, in front of these, it seemed as if the frontal bone had undergone a sort of twist, so that its left side was pushed forwards and its right backwards. An injection having been thrown into the right carotid artery, M. Aubry examined carefully the ophthalmic artery and its branches. There was no aneurism of this vessel; but the tumour consisted of a dilatation and thinning of the ophthalmic vein. On following out carefully the course of the vein, it was found to constitute the projections which had been observed on the upper eyelid. The vessel was as large as the little finger; its walls were so thin, that they might be compared to a serous sac opening into the cavernous sinus, which was itself three times as large on the right as on the left side. The vein in passing through the orbit followed a winding course; and the infraorbital vein, at its point of entry, was itself dilated. The nasal and facial veins were also dilated and thinned near the inner angle of the eye. The right cavernous sinus was much dilated, and communicated freely with the varicose ophthalmic vein; but posteriorly it ended in a *cul-de-sac*, instead of communicating with the inferior petrosal sinus.

For the pulsations observed in the tumours during life, M. Aubry suggests two possible causes. 1. The pulsation was due to the beating of the carotid artery in the dilated cavernous sinus and the transmission of the impulse to the blood in the vein. M. Bérard, being at the time at Rennes, was, on examining the vessels, inclined to this explanation. Or, 2, in consequence of the vascular development in the cranial walls, the capillaries being dilated, established so free a communication between the arteries and veins, that the action of the heart on the venous blood was more than usually perceptible. M. Aubry prefers this latter explanation, because, while throwing water through the vessels with a syringe previously to injecting them, he observed the tumour to become filled, and was able to reproduce in this way the pulsations and the *souffle* which had been observed during life. It was evident, he thinks, that the beating, distension, and souffle which accompanied the injection of water by the syringe were due to this fluid reaching the vein, exactly in the same way as during life the same phenomena depended on the entrance into the vessel of blood forcibly impelled by the heart through the capillaries.—*British Med. Journal*, June 4, 1864, from *Gaz. des Hôpitaux*, 12 April, 1864.

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48. *Amaurosis cured by Subcutaneous Injection of a Solution of Sulphate of Strychnia.*—The Berlin correspondent of the *Med. Times and Gaz.* (Jan. 21, 1865), cites the following examples of this: M. Frémineau has cured a case of amaurosis in a boy 15 years of age, who was, on the third day of a severe typhoid fever, with predominant cerebral symptoms, affected by weakness of the left eye, which, after five days, passed into complete amaurosis. Within a fortnight he was convalescent, but the amaurosis persisted. He was not able to distinguish between light and shade, the pupil was very much dilated, and was not acted upon by light; but the ophthalmoscopic examination did not show anything abnormal. The right eye was quite healthy, and there were no symptoms of cerebral disturbance. After two months the general health was quite re-established, but the sight remained lost. M. Frémineau then made an injection of a solution of 20 centigrammes (3 grains) of sulphate of strychnia in 20 grammes (about 5 drachms) of water on the left half of the forehead, along the course of the frontal nerve. The first time he injected four drops, then twelve, then twenty, and twice thirty drops. After the second operation the patient began to see objects, but they appeared to him so small and distant as if seen through an inverted opera-glass. At the same time there was double vision. These anomalies disappeared after the third and fourth injection, and after the fifth vision was as perfect in the left eye as in the right, the iris having regained its contractility, and the left pupil being of quite the same size and condition as the right.

Another somewhat analogous case occurred under the care of Dr. Sæmann, of Königsberg. The patient, although being 80 years of age, was in good general health, with the only exception of profuse bleeding of the nose, of which he occasionally suffered, and for which a local application of the liquor ferri sesquichloridi was resorted to. One evening having been quite well for some time before, he suddenly became totally blind; he could neither perceive objects nor distinguish between lights and shade. There were no other morbid symptoms, neither headache, nor febrile excitement, nor paralysis. A venesection of eight ounces was ordered, together with application of ice to the forehead and the eyes, and atropia was applied to the eyes in order to facilitate the ophthalmoscopic examination. A purgative of senna and sulphate of soda was also given, and perfect quiet enjoined. The pupils dilated very little, in spite of four successive applications of atropia. The examination by the ophthalmoscope did not show anything abnormal; the optic nerve appeared to be in good condition, and there was not a trace of extravasation or effusion within the eye. Six leeches were applied to the forehead the next day, but produced as little effect as all the other remedial measures which had previously been resorted to. A week after the commencement of the affection Dr. Saemann injected twelve drops of a solution of a grain of nitrate of strychnia in an ounce of water (equal to one-fortieth of a grain), in the region of the left supraorbital nerve. Scarcely two minutes had elapsed when the patient exclaimed,—"Good God! I suddenly see much clearer, I see the church steeple, the trees, I see the leaves moving." The patient was, in fact, able to distinguish large objects with the right eye as well as the left, but no small objects. Vision remained in this condition until the evening of the same day, but was again much worse on the following morning, so that the patient could only very faintly distinguish the outlines of large objects. Another injection of one-thirtieth of a grain of the nitrate of strychnia was then made, which had the same almost immediate effect as the former. The injections were now repeated six times successively, the whole quantity of strychnia injected amounting to two-thirds of a grain. At the end of the treatment, the patient could read his newspaper and play a game of cards.

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49. *Iridectomy in Glaucoma.*—Prof. QUAGLINO, of Pavia, at the end of an excellent account of our present knowledge concerning glaucoma, expresses the following opinions upon its curative treatment by iridectomy: 1. Glaucoma, arthritic amaurosis, and arthritic ophthalmia of the older ophthalmologists, are dependent upon one and the same identical morbid process, which only varies by the length or acuteness of its course. 2. The pathological condition which induces chronic and acute glaucoma is choroïditis, with increased secretion of the vitreous humour, and consequent distension of the retina and papilla of the optic nerve, associated with an extraordinary rigidity and hardness of the sclerotica, proper to the senile condition, or induced by an atheromatous and arthritic process at a less advanced age. 3. In acute glaucoma not only is the choroid implicated by the morbid process, but this also extends to the retina, the hyaloid, and the internal membranes, while in chronic glaucoma the choroid is alone in question. 4. The functional phenomena which precede and accompany the development and course of glaucomatous amaurosis are a consequence of the compression which the nervous elements of the retina and the optic nerve undergo, and of their progressive atrophic degeneration. 5. The most prompt and certain means which art possesses for arresting the progress of this disease, and restoring the equilibrium in the pressure of the vitreous humour and the lateral pressure of the vessels of the retina, is iridectomy, the excision of an extensive portion of the iris. 6. Iridectomy may be resorted to with advantage even in cases in which there are evident physical signs of atrophy of the papillæ with excavation, lateral limitation of the field of vision or amblyopia, providing there exists extraordinary hardness of the globe of the eye. In such cases iridectomy at least removes one of the morbid elements (internal pressure) which favours atrophy of the papillæ, and thus frequently arrests the amaurosis. 7. Iridectomy possesses no advantage in very inveterate glaucoma, when the papilla and the vessels have been for a long time atrophied; in cases in which an optic neuritis inducing atrophy of the papillæ has preceded the glaucoma, or when glaucoma is complicated with serious affections of the cerebral optic centres. 8. Iridectomy is of service in cases of obstinate ciliary neuralgia, even when amaurosis has become complete, providing that it depends solely upon compression of the ciliary nerves.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1865, from *Annali di Méd.*, Oct.

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50. *Cancroid of the Cornea.*—Mr. J. Z. LAURENCE exhibited to the Pathological Society of London (Jan. 17, 1865) a man 27 years of age, whose eye presented the following appearances when Mr. Laurence first saw him in April, 1863: Occupying nearly the whole outer half of the cornea was a soft, vascular, conical growth measuring about 4‴ transversely, about 3‴ from above down-

wards, and rising 1½''' above the surface of the cornea. The greater part of the tumour appeared to spring from the deeper layers of the cornea, the smaller portion on the outer side passing insensibly into the adjacent scleral surface. Numerous vessels passed from the highly congested conjunctiva to the surface of the growth, especially one large vein from the inner side. The patient stated that he had experienced but little pain in the eye, and that the growth was but slightly sensitive to the contact of a foreign body, such as a fine probe. The portion of the cornea unobscured by the tumour was nebulous and highly vascular, and at its upper end and outer part adherent to the upper lid, which was very much thickened and congested, and its palpebral surface roughened by minute fungoid elevations having the character of surgical granulations. The visual power of the eye was reduced to mere quantitative perception of light. When last seen, on January 17, 1865, the eye appeared to have undergone little general change, excepting that the conjunctiva was more vascular, the growth larger in all its dimensions, and its apex flatter, softish, uneven, and of a dirty white colour (ulcerated); numerous large tortuous vessels running to it, and ramifying over its surface. The protrusion of the growth between their edges prevented the complete closure of the lids. The upper lid was considerably thickened at its margin, and projecting from its under surface, moving freely upon the cornea, were two lobular fleshy growths, each measuring about 1½''' in length. Three cases of cancroid of the cornea (an affection which Mr. Laurence said is by no means frequently observed) have been reported in the *Ophthalmic Review* (i. 79).—*Med. Times and Gaz.*, Jan. 28, 1865.

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51. *Eczema of the Eyelids, Conjunctiva, and Cornea.*—M. Furneaux Jordan, in a paper read before the Royal Medical and Chirurgical Society (Jan. 10, 1865), remarks:—

"Many observers, and especially writers on the diseases of the skin, have considered ophthalmia tarsi to be simply eczema of the lids. Dr. Mackenzie has pointed out that scrofulous, or, as he terms it, phlyctenular ophthalmia, is frequently associated with eruptions on the skin. It is the object of this paper to show that not only ophthalmia tarsi is eczema of the lids, but that granular lids, a peculiar swelling of the subintegumental connective tissue of the lids, lippitudo, strumous ophthalmia, certain forms of simple or catarrhal ophthalmia, keratitis and strumous keratitis, and certain ulcers on the cornea, are merely varieties of eczematous disease. Cases of extreme, firm, indolent, pale or pinkish swelling of the lids occur occasionally, the only cause of which is eczema of the margins of the lids. The eczema may be very slight, or it may pass away quickly, and leave only the swelling behind. Unchecked eczema of the eyelids terminates in lippitudo, just as persistent and progressive eczema of the cornea produces pannus. Both these conditions are analogous to the eczematously red, swollen, and moist condition of the skin which may persist for an indefinite period. Eczema of the conjunctiva presents many important features. The so-called strumous ophthalmia may be regarded as chronic eczema. The several stages of pimple, vesicle, ulcer, or thickened patch, admit of indisputable demonstration. In acute eczema of the conjunctiva, there is for a few days a uniform scarlet colour; then a crowd of vesicles, which soon pass away, and leave an irregular or patchy redness—each patch, however ill-defined, having a redder, thicker, and possibly ulcerated centre. These cases have a slight muco-purulent discharge, and are always tedious. If treated as eczema, they speedily recover. The so-called keratitis, or strumous keratitis, is eczema of the cornea. When vesicles, white patches (necessarily white because of the anatomical structure of the cornea), or ulcers occur on the cornea in conjunction with vesicles on the conjunctiva, the term 'scrofulous ophthalmia' is commonly used. If the same pimples (necessarily flat), vesicles, patches, or ulcers occur on the cornea alone, especially near its centre, the term keratitis is applied, notwithstanding the symptoms are similar, and notwithstanding that there is usually, if it be carefully sought for, evidence of eczema of the lids or face, or ears or scalp. The characters of eczema of the cornea are quite as typical as they are of eczema elsewhere. The several varieties of eczema of the cornea, conjunctiva, and lids are combined in a great variety of modes. They are much more frequently combined than not, and very frequently indeed associated with cutaneous eczema in its favourite localities. Eczema is often limited to sites as small as the cornea. The treatment should be directed to eczema. Its chief features are non-stimulating diet and alkaline medicines, with a little iron added in most cases. If the lids are affected, as also in pannus, lippitudo, and granular lids, a little of any of the 'eczema ointments' may be used, with the customary attention to details; if much photophobia, a little morphia may be given in the morning."

Mr. BARWELL had no doubt but that any new view of so common a disease would be considered important; but he thought the author had taken too many cases into the grasp of one hand. He (Mr. Barwell) could not think that granular lids and strumous ophthalmia belonged to the same category. He thought the author had not sufficiently distinguished herpetic eruptions from eczema. He was surprised to find the author describing a long treatment by alkalies and iron for a disease like phlyctenular ophthalmia. He considered the disease to be herpetic, and that the photophobia attendant on it might be relieved by treatment in twelve hours. As for the connection of certain ocular affections with eczema, they might arise from similar general conditions of the system, and alkalies might be of use. Yet he should not be inclined to treat phlyctenular ophthalmia on the slow method recommended by the author.—*Med. Times and Gaz.*, Jan. 21, 1865.

52. *Encephaloid Cancer of the Lachrymal Gland.*—Dr. WILLIAM MACKENZIE, of Glasgow, relates (*The Ophthalmic Review*, Jan. 1865) the following very interesting case of this comparatively rare affection of the lachrymal gland:—

"C. M., an unmarried female, aged 33, when she came under my care had suffered for ten weeks from protrusion of her right eye from the orbit. She could not raise the upper lid completely; the eyeball was depressed, and she could not raise it. A nodulated, but not hard, tumour was felt in the seat of the lachrymal gland. She made no complaint of pain. The vision of the right eye was dim, so that she could read only slowly with it. Before I saw her she had had pain under the right short ribs, for which she had been leeched and blistered.

"The application of leeches over the swelling in the orbit, solution of iodide of potassium internally, and the use of the same medicine externally, in the form of an ointment, having had no effect, I proceeded to extirpate the gland. It proved quite soft and brain-like. After its removal, the finger could be passed easily far into the orbit.

"A few days after the operation, from which the patient recovered well, she pointed out to me a firm cancerous mass under and attached to the skin between her left mamma and the axilla, and two similar masses under the skin of the abdomen. She had said nothing of these tumours to me before the operation. This shows the propriety of our inquiring of patients presenting any tumour in the orbit whether anything similar exists in any other part of their body.

"Soon after going home to the country, this patient was seized with partial hemiplegia of the left side, the lower extremity being unaffected. A firm tumour began also to show itself beneath the right orbital arch, without pain, but with much tumefaction and discoloration of the upper lid, the eyeball protruding considerably, and vision lost.

"On reading a case of fibro-plastic tumour of the orbit, recorded by Mr. Laurence in his work on *The Diagnosis of Surgical Cancer* (2d edition, p. 26), and which occurred in University College Hospital, under the care of Mr. Quain, I was struck with its resemblance to the cases of chloroma of the lachrymal gland which I have related, or to which I refer, in the 4th edition of my *Practical Treatise on Diseases of the Eye*, although it is not mentioned by Mr. Laurence that the lachrymal gland was the seat of the tumour. On mentioning this to Mr. Laurence, he favoured me with the following extract from Mr. Quain's own notes, which adds an important fact to the history of the case (certainly the most interesting one of the disease on record), and confirms the conjecture I had formed regarding it.

"'*Nov.* 30, 1853. At present the left eyeball, together with the swollen lids and hypertrophied and indurated lachrymal gland, form a hemispherical protrusion, whose base corresponds nearly with the orbital orifice.

"'*Dec.* 3. The tumour appeared to lie behind the eyeball. . . . . . The eyeball was first removed, and after that the tumour.'"

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53. *On Artificial Eyes.*—Dr. Debout states that it is quite unnecessary to reduce the size of the eye before adapting the shell; "on the contrary, the less the globe of the eye is diminished in volume, the less the eyelids droop, and the more the region of the eye preserves its normal projection." It is indeed of importance to preserve, as much as possible, the volume of the lost eye; the pressure of the shell is diffused over a greater extent of surface, and better borne; granulations seldom form; the artificial eye is more mobile, and the appearance more natural. Great care must, however, be used in fitting the shell when the stump is large. Sometimes the artificial eye is very useful as a means of protection; for example, a lady lost her right eye from ophthalmia in 1848; vision was completely destroyed, yet the stump continued so sensitive to wind, cold, or damp, that, notwithstanding the use of very dark blue spectacles, she was obliged to remain in her room. All the means employed were of no avail, and she believed herself the victim of an incurable disease. At last, after a seclusion of eight years in almost complete darkness, she came to Paris for advice. M. Boissonneau adapted a shell which immediately removed the unpleasant symptoms. She has now worn an artificial eye for seven years, and has returned to her former habits. She can walk out in all weathers, and go into society; neither the inclemency of the weather nor the glare of the light has any injurious effect upon her.

A number of cases are related to show that it is unnecessary to destroy adhesions between the lid and the globe; all that is required is that the artificial eye be furnished with indentations corresponding to the cicatricial bands. The author also proves, by the narration of cases, that an artificial eye can be adapted not only where the globe has been enucleated, but even where all the soft parts have been removed from the orbit. Thus, in a young man whose eye had been extirpated for cancer, M. Boisonneau adapted an artificial eye with such success that the patient can wear it without inconvenience from morning to night, and can move it from side to side.

He concludes with an account of two cases in which not only artificial eyes, but also artificial eyelids, were applied.—*The Ophthalmic Review*, Jan. 1865.

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54. *On the Simulation of Amaurosis.* By R. Liebreich.—It is exceedingly rare for individuals with normal sight to pretend that both eyes are blind. Such an occurrence has, however, been noted, as a psychical aberration, in females about the period of puberty. The normal action of the pupils, and the absence of ophthalmoscopic symptoms, are the principal foundations of the diagnosis.

It more often happens that patients who suffer already from advanced amblyopia, assert that they cannot see light with either eye; unable to follow an occupation, they endeavour by this means to gain assistance, &c. It is only after great experience that the surgeon can determine whether certain changes in the choroid, retina, or optic nerve, found by the ophthalmoscope, are sufficient to account for loss of quantitative vision. Suspicion must arise when a patient asserts that he cannot perceive light, though the pupils act readily, enlarging or contracting according to the different degrees of illumination. No full decision can be come to when a patient asserts that he perceives light, but not objects.

Simulated amaurosis of a single, and especially of the right eye, is very common, with the view of escaping the conscription. The individuals are usually well prepared to play their part, and have not unfrequently dilated the pupil by belladonna. Such a state of the iris will often assist the surgeon in detecting imposition, for the pupil is then far larger than in amaurosis. Belladonna not only paralyzes the filaments of the third nerve passing to the sphincter, but stimulates the sympathetic fibres distributed to the dilatator pupillæ. In natural mydriasis, the sphincter alone is paralyzed; in amaurosis the muscles of the iris possess their ordinary power; there is no reflex contraction from irritation of the retina; but in every other respect the iris acts in a normal manner. This is the most characteristic sign of monocular amaurosis. It must be remembered that the pupil contracts—1. Owing to the action of light on the same eye;

2. Owing to the action of light on the other eye; 3. During accommodation for near objects; 4. During contraction of the internal rectus.

Much information may be gained by testing the size of the pupil under these different conditions. In practice the other eye should be closed; the eye to be examined should be held in one position, and alternately shaded and exposed to the light. If then the pupil is motionless, whilst it changes in size when the other eye is alternately shaded and exposed, and contracts when the other eye fixes a near object, there can be no doubt that one eye is completely amaurotic. If the iris is motionless under all the conditions mentioned, there is either natural or artificial paralysis. If it moves according to the amount of light, when the other eye is closed, the eye is not perfectly blind, although there may be possibly entire loss of qualitative perception. To decide the latter question, the patient should be induced to believe that the examination of the one eye is finished, and that of the other is commencing; a prism, with its base upwards or downwards, is then placed before the sound eye, both eyes being open. The image is single if the first eye is really amaurotic; but if the blindness is simulated, the patient sees two objects. By testing in this way the power of vision, the surgeon may determine whether the other eye is weak-sighted, and to what degree.—*Ibid.*, from *Nouveau Dict. de Méd. et de Chirurg. Pratiques*, i. 787.

MIDWIFERY.

55. *Excessive Sickness in Pregnancy.*—Dr. HENRY BENNETT states (*Lancet*, Jan. 7, 1865) that, according to the experience of his entire obstetrical career, extreme intractable sickness during pregnancy is generally occasioned by the antecedent existence of inflammatory mischief of the uterus, or of actual chronic inflammation of the body or of the neck of that organ. Women who have suffered from and have been cured of uterine inflammation, a short time before becoming pregnant, nearly always have laborious pregnancies. They suffer greatly from sickness, from uterine ovarian and dorsal pains, and from hysterical and neuralgic symptoms. That such should be the case is but natural. A great and trying physiological task is imposed on an organ only recently cured, yet tender. Is it surprising that it should perform its functions with difficulty, and react painfully on sympathetic organs? Still worse is the case of the patient who becomes pregnant whilst actually labouring under chronic inflammation of the body of the uterus or of its neck. In the former case the pregnancy is not only laborious, but is very often brought to an early and premature close. Inflammation of the neck is not attended with quite so much danger as regards the existence of the fœtus, but may render the life of the mother one of anguish and suffering, especially from constant and extreme sickness, if the pregnancy is prolonged. Many young women marry actually suffering from inflammation of the uterine neck, which marriage aggravates. If pregnancy occurs, they may become the victims of excessive sickness. Many women who have had children, again become pregnant whilst under the influence of some cervical lesion, laceration, inflammation, or ulceration, the result of their last confinement. Is it surprising that they should suffer from an unusual amount of sickness?

From what precedes, it must be evident that the duty of the obstetrician in a case of obstinate and dangerous sickness during pregnancy, which resists medical treatment, is to examine his patient, and to ascertain the state of the uterine organs. If he finds, as I have constantly found, actual inflammatory disease, his duty is to treat it. What can sedatives and medicinal agents in general poured into the stomach do for inflammatory and ulcerative disease of the uterine neck? In such cases a few touches of nitrate of silver and an astringent injection will arrest sickness that has baffled the skill of half a dozen medical men and the resources of the Pharmacopœia. I have thus saved the lives of many children, and I verily believe of some mothers. I have heard of cases of death from sickness, in which no examination as to the existence of uterine mischief was thought of, but I have never known of any in my own practice, consulting or private, nor have I ever been obliged to artificially bring on abortion, as recommended by obstetric authorities in extreme cases. Nearly all my very severe cases have been cases of uterine disease, and have yielded to the proper local treatment of the disease, not to medicine.

After all, the above facts are merely the extension to the pregnant state of our present knowledge of uterine pathology. One of the commonest symptoms of uterine inflammation is nausea and sickness. In such cases the only treatment to be relied on is that of the uterine disease.

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56. *Excessive Vomiting in the Eighth Month of Pregnancy.*—Dr. George H. Kidd records (*Dublin Quarterly Journal of Medical Science*, August, 1864) the following interesting case of this:—

"On the 30th of May I was called to see a lady, residing at Sandymount, who had been suffering for two days from excessive vomiting. She was at the beginning of the eighth month of her third pregnancy. Her first terminated in abortion, at the end of the second month, induced, I believe, by excessive vomiting. I saw her for the first time at this period, and found the ovum escaping from the uterus. In the second pregnancy there was considerable sickness in the early months; but it at no time became so severe as to endanger her life, though, for a time, it caused great prostration. She went on, however, to the full period of pregnancy, and was delivered of a healthy child. In the present pregnancy there was no sickness till the end of the seventh month. When I saw her she had been sick for two days; the vomiting was almost incessant, occurring even on taking a spoonful of water, and very frequently without even this to provoke it; large quantities of green acid fluid were discharged, much more in quantity than had been swallowed; the colour was the bright green fluid, like chopped parsley, that has been found to be produced by blood acted on by the gastric juice. She complained of great thirst, with acidity, and burning pain at the epigastrium. The bowels were confined, and there was very great prostration. I ordered creasote in two minim doses, with a quarter of a grain of opium, every second hour; mustard sinapisms to the epigastrium, and iced soda-water and brandy to be taken in small quantities, frequently. This seemed to procure relief for a few hours, but the vomiting returned with increased frequency, and nausea and great prostration. Dr. Jacob, of Maryboro', happening to be in the house, kindly saw her in my absence; he ordered solution of magnesia and aromatic spirits of ammonia, and afterwards prussic acid; but still the vomiting continued, and the prostration increased.

"On the 1st of June I found the vomiting still going on, the bowels confined, the sense of acidity, and burning pain at the epigastrium, and the thirst as before; the surface cold, the features pinched, the eyes sunken, and the pulse feeble. With a view to invert, or rather restore to its proper direction, the peristaltic action of the intestinal canal, I ordered an aperient, and in a form that I have often found to be retained and to act when no other would, namely, an ounce of sulphate of magnesia dissolved in six ounces of peppermint-water, of which I directed that a tablespoonful should be taken every hour. The iced soda-water and brandy to be continued, and cold beef-tea and iced milk to be given in spoonfuls frequently repeated, even though it should be vomited off again. The abdomen to be fomented with hot water and turpentine. When I saw her again in the evening I found that no relief had been obtained, the stomach having rejected everything immediately on its being swallowed. I now ordered two draughts, each containing half a drachm of solution of morphia, hoping to procure her a night's rest; but they were both rejected, and she obtained no rest, the vomiting continuing all night.

"*June* 2. The prostration was so great that she was unable to move in the bed, and her husband implored of me to induce premature labour, which I promised to do if the symptoms did not soon yield, which I still hoped they would on getting the peristaltic action directed downwards instead of upwards. I now ordered a large turpentine and castor oil enema, to be given immediately, and to be repeated till the bowels were moved; and I directed a suppository, containing half a grain of the muriate of morphia, to be administered immediately after the enema had acted. A second enema was required before the desired effect was produced; the suppository was then given, and she slept for four hours; awoke refreshed, and with a desire for food, which she was able to take and retain. From this period convalescence was uninterrupted. She became able to eat and drink, and take abundant exercise; and on July 18th was delivered of a healthy male child, and has made a perfect recovery.

"This was a somewhat unusual case of the vomiting of pregnancy, from the period at which it commenced, the violence of the attack, and the rapidity with which excessive prostration set in. As a matter of course, a suspicion of some cerebral affection, or of strangulated hernia, arose, but a careful examination afforded nothing to justify it. The vomiting of pregnancy is no doubt a reflex symptom, having its origin in some uterine or ovarian irritation. Cases are recorded in which some misplacement of the fundus, or inflammation, and even ulceration of the os and cervix, or false membrane between the fœtal membranes and the uterus, have been found. The ovary, too, has been found to be the cause; but in most cases no morbid appearance can be detected after death, yet it cannot be doubted that the symptoms arise from some uterine or ovarian irritation. The symptoms are of a twofold nature: first, there is inverted peristaltic action, causing constipation and vomiting; and secondly, under the influence of perverted nervous action morbid secretions are thrown out. The indications of treatment are: 1. To exhaust for a time the excitability of the nerves proceeding from the lower part of the abdomen, so as to prevent their carrying to the spinal cord the morbid impressions which are reflected to the stomach; and this can be done, as physiologists are well aware, by over-stimulating them—as by the free application of turpentine epithems. 2. To restore the peristaltic action to its natural order, to be accomplished by the use of suitable aperients, given by the mouth or by enemata. 3. To remove the uterine or ovarian irritation, either by sedatives applied directly to the parts, as by suppositories; or, where there is evidence of inflammation, applying leeches, or caustic, or other appropriate treatment, to its seat; and when these means fail, and the prostration is so great as to endanger the patient's life, by inducing premature labour."

57. *Inquiry into the Best Mode of Delivering the Fœtal Head after Perforation.*—Dr. J. BRAXTON HICKS read a paper on this subject before the Obstetrical Society of London (Dec. 7, 1864). In introducing the subject of this paper, the author said that, notwithstanding the employment of premature labour and version, cases would occur in which it was either necessary or desirable to perforate. He pointed out that the subject had of late years not received the attention it deserved. He alluded to the disputes which arose upon Dr. Osborn's case of E. Sherwood, when that physician asserted he could draw a child's head through a brim having an inch and a half antero-posterior diameter, by tilting the base of the skull sideways, and concluded that Cæsarean section might be done away with. The disputes which followed were so acrimonious that the valuable points elicited by Drs. Hull, Hamilton, and Burns were, to a certain extent, lost sight of, at least as far as they were calculated to give any rule in practice. Dr. Burns in particular deduced from his experiments that the calvarium of the fœtal head being removed, the base of the skull could be drawn down easier face foremost than in any other direction. With this the author's experiments entirely agreed. And he pointed out further the advantage of the chin pointing anteriorly during the descent. He further instituted a comparison between the opposing diameters when the face is made to present and the other modes of drawing down the base of the skull. He then proceeded to answer the inquiry: if in cases of extreme lessening of the antero-posterior diameter, it is best to cause the face to present; and if, after simple perforation, it is best to continue vertex presentation, at what degree of reduction of the size of the head do the two presentations cause equal obstruction? This he answered by the results of experiments, which might be thus concisely stated. That, as is acknowledged by all, vertex presentation in natural labour is the best; and that after perforation and evacuation of the brain up to the extent of one-fourth,

this rule holds good; yet if the evacuation of the brain and collapse of the calvaria by this means, or by more or less fracturing the bones, be carried to a greater degree, we find that the facial presentation affords the easiest mode of delivery, provided that the mentobregmatic falls beneath the bizygomatic diameter. And, further, that if we remove the whole calvarium, leaving merely the base, and then induce face presentation, taking care that the chin, as it descends, points anteriorly, we diminish to the smallest possible amount, short of wholly breaking it up, the opposition of the head, leaving only from one to one and a half inch in depth to oppose the conjugate diameter of the brim, and from three to four inches at the outside to oppose the transverse. The author, as practical deductions from these facts, recommended that in cases where simple perforation failed, to allow the descent of the head in cases of obstruction—say above three inches antero-posterior diameter—to break up purposely and carefully the bones of the calvarium, and remove at least a portion, preserving the scalp as protection to the edges, and then to induce face presentation. That when the diameter was under three inches, then to remove all the calvarium, and then to induce face presentation, taking care to bring the chin forwards, if not already in that direction. Dr. Hicks then pointed out the facility of doing this with a small blunt hook, which could be readily, and without chance of injury, passed up to the orbit. The chin, he had found, had a tendency to point anteriorly upon being drawn down. He then entered upon some useful details, and compared this mode of craniotomy with the cephalotribe. He remarked that by this means, in deciding upon whether craniotomy or Cæsarean section should be performed, the head was not so much to be considered as the size of the body in cases of brim obstruction. The paper was illustrated by eight cases of craniotomy, six of which were required for contraction of the conjugate, and two for obstructions in cavity. In all the induction of face presentation was attended by instant and complete passage through the obstacle. In some of the cases the shoulder and pelvis of fœtus gave more difficulty than the head. The paper was accompanied by details of the experiments.

Dr. Greenhalgh considered that the author had done much service to the profession by bringing the subject forward in such a scientific and practical manner. He drew atttention to the dangers attending cases of extreme deformity of the brim, remarking that there was a wide difference between extraction and safe extraction, especially (as is often the case) where the passages are swollen and inflamed. He called to mind the occasional difficulty of entering the skull with the perforator, and quoted a case where this was almost impossible. He thought, from a case which he had seen at Vienna, that he should use Braun's cephalotribe in a future difficulty. He had, in a case where the whole vault of the calvarium had been entirely removed before he arrived, delivered by fixing three crotchets outside of the presenting part.—*Med. Times and Gaz.*, Jan. 28, 1865.

58. *Case of Vagitus Uterinus.*—Dr. Fraser read before the Obstetrical Society of Edinburgh (July 27, 1864) the following notes of the case: By the term vagitus uterinus I suppose is meant not the crying of the child after rupture of the membranes when the external air can reach it, virtually a phrase of extra-uterine life, but the crying of the fœtus in utero while the ovum is entire.

Two instances of this rarely observed phenomenon occurred in a patient of mine, from whose statements, which have been corroborated by her husband, I have made the notes of the occurrences, which I beg to lay before the Society.

One Sunday evening, Mr. G. and his wife, who was within ten or twelve days of her first confinement, were at home by themselves. Mrs. G. was resting on a bed, suffering patiently much annoyance from very vigorous movements on the part of the child, and listening to her husband, who was reading the Bible, while he knelt on a sofa beside her. All at once they heard with amazement a cry like that of a newborn babe. Though somewhat muffled, the sound was yet so distinct and so evidently arose from the place beside him, that Mr. G. could not help exclaiming: "Mercy on us, is the child in the world?"

Mrs. G. was quite sure (she declares) that it was the child within her that cried, and was so much overcome that, for some time, she could not summon words to assure her husband that birth had not taken place.

Up to the time of birth the child, which proved to be a boy, was not noticed to cry again, though it exhibited other signs of a strong vitality.

In the next two subsequent pregnancies, the fruit of which was a girl and a boy, both very healthy children, no vagitus uterinus was heard.

In the fourth pregnancy, however, the phenomenon was again noticed. The circumstances were much the same on this as on the former occasion. It was on a Sunday evening, eight or ten days before Mrs. G.'s confinement. She and her husband were in a room alone; the children were in bed in another apartment; and the house was quiet. The patient was reclining on a sofa, annoyed as on the first occasion by the strong movements of her unborn child, and her husband was sitting nine or ten feet off, engaged in reading, when she heard a sound like the bleating cry of a newborn baby, which seemed to come from her womb, and which she is positive did come from that part. Her husband also heard it where he was sitting, and so distinctly, that, dropping his book, he started to his feet and thought for a moment that the child was really born.

In this instance as in the former the cry did not last long, no longer than might be supposed to arise from a single expiration, and was not repeated during the remaining time of pregnancy. The child was a female. Since then Mrs. G. has borne two children, but has not heard it with either.

Remarks and Queries.—Both instances occurred when mother was at rest.

Is quietness on her part necessary to the production of the sound?

Is it not likely that instances pass unnoticed during sleep?

Whence the air which enables the fœtus to cry?

Is it excreted by child itself or by the membranes?

If it be admitted that a child can cry in utero, it must also be admitted that the lungs can be more or less expanded before birth, though the child be afterwards born dead; hence another reason for caution in judging from the hydrostatic test.—*Edinburgh Med. Journ.*, Nov. 1864.

[We are induced to ask another question. Was not the sound produced by the movement of *air in the bowels?*—ED. AM. JOURNAL.]

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59. *Puerperal Embolism.*—Dr. WADE, of Birmingham, read a paper on this subject before the Obstetrical Society of London (Dec. 7, 1865). The author reviewed the history of the disease, which he took as a real evidence of the progress of medicine. He entered into a description of its nature and varieties, and gave a sketch of Virchow's doctrine and of his experiments upon the production of embola. He then described a case which had occurred in his practice, in a woman suffering from phlegmasia dolens, who was suddenly, during exertion, seized with severe dyspnœa three weeks after her delivery. The pulse was feeble; skin cold and clammy. This state continued, but became each day more severe, for a fortnight, when she died. As was prognosticated, a large clot was found in the pulmonary artery, extending from the third or fourth ramification.

Dr. Barnes observed that the history of this case and of others in which embolism followed upon phlegmasia dolens had an important bearing upon treatment. Thus it was usual, after the subsidence of the acute symptoms of phlegmasia dolens, to rub the affected limb with the view of promoting absorption and supplying passive exercise to the muscles and other tissues. It might be that this friction would favour the detachment of a clot from the femoral vein, which being thrown into the circulation would constitute "embolism." This danger should be borne in mind. He thought the connection between a febrile state and clotting or thrombosis, suggested by the question of Dr. Ballard, was very frequent. He believed in most cases of phlegmasia dolens there was a pre-existent abnormal state of the blood which predisposed to coagulation. He (Dr. Barnes) had gathered up in his memoir on thrombosis and embolia, published in the Society's *Transactions*, vol. iv., most of the information at that time extant upon the subject. Since then, however, our information had been considerably enlarged by the publication of new cases.—*Med. Times and Gaz.*, Jan. 28, 1865.

60. *Purgatives in Puerperal Fever.*—Prof. Breslau, of Zurich, states (*Archiv. der Heilk.*) that, during three and a half years, he has seen 137 cases of puerperal fever among 485 lying-in women; of these, 30 died Of the 137 cases, 81 were mild and 56 severe. He gives, after relating the histories of several cases, the following conclusions: 1. It is not prudent to wait more than twenty-four hours after the commencement of puerperal fever before administering a purgative—even when it is not certain whether the disease is puerperal or milk fever. The administration of the purgative, he says, can never do harm; while its omission may produce most grave results. 2. The purgative ought to be energetic; and the practitioner ought not to fear to repeat it twice, thrice, or oftener, according to circumstances. Dr. Breslau prefers infusion of senna with potassio-tartrate of soda. Sulphate of magnesia or of soda may also be used; or castor-oil, jalap, or calomel. Dr. Breslau usually does not repeat the same purgative, but varies the substances used. Not unfrequently the diarrhœa continues; the disease then takes a favourable turn. 3. Inflammation of the peritoneum, ovarian ducts, or Fallopian tubes ought not to deter us from the use of purgatives; they are to be regarded as the most powerful antiphlogistic remedy. Besides purgatives, other means may be employed according to circumstances; such as leeches, mercurial frictions, ice, cataplasms, etc.; but, when there is not intense peritonitis, these are useless. Purgatives alone can arrest commencing peritonitis. The author supports his views by the recital of twenty-seven cases.—*Gazette Méd. de Paris*, Oct. 22, 1864.

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61. *Prevention of Hemorrhage and After-Pains, occasionally following Delivery of the Placenta.*—Mr. G. K. H. Paterson states (*Edinburgh Med. Journ.*, June, 1864) "that several years ago, when actively engaged in lying-in practice, not a few multiparous women, ere they were delivered of the placenta, told me that as soon as delivered of it, they would have severe after-pains. And it was true as they said: either sharp or violent uterine pains came speedily on, notwithstanding that the bandage was as usual passed round and well tightened; for this an anodyne was either given at once, or the patients were not interfered with for a day or two, then a purgative was ordered to open the bowels, when the pains either went off or gradually subsided. But, years ago, happening to observe that several of the multiparous women I was called to deliver, had, after the birth of the child and expulsion of the placenta, unusually large or pendulous bellies, with more or less of after-pains, before fastening the bandage, I compressed the abdomen firmly with my open hands—one on each side of the linea alba—several times up and down and laterally, expelling at the same time a good deal of fluid blood and coagula, with decided relief of the pains, diminution of the size of the abdomen, and speedy contraction of the uterus; and a bandage being applied immediately afterwards, little farther attendance was required on my part, as the treatment seemed to hasten recovery considerably.

"In the lingering labours, too, of multiparous delicate women, and especially when there is found a flaccid state of the uterus, with more or less of hemorrhage and after-pains, succeeding expulsion of the placenta, bi-manual compression has a striking and speedy effect, *first*, in expelling coagula; *second*, in constringing the veins of the uterus; and, *third*, in inducing proper contraction of it.

"This practice, from its good effects, I have for years past continued; and, but for it, I have not the slightest doubt whatever that hemorrhage and after-pains, or hour-glass contraction, attended by great exhaustion, if not loss of life, would have often occurred in the cases under my care ere other means had time to take effect. Indeed, now, in all my cases of labour, after complete delivery, I immediately compress the abdomen more or less as a reliable preventive of uterine irregularity, flooding and pain. previous to tightening the bandage, and have never to my recollection since I practised this method been called back on account of post-partum hemorrhage and violent pains, or hour-glass contraction.

"The readiness and freedom with which this preventive method of compressing the uterus through the parietes of the abdomen, when it is tumid or flaccid or torpid after labour, and its success in emptying the organ of irritating coagula and allaying agonizing pains, or in subduing these if present some time afterwards, as well as in checking hemorrhage, must commend the more general practice of it in preference to trusting chiefly to manipulation of the internal uterine surface; while no one can forget to take into account the greater risk by the latter method of increasing the hemorrhage, before it can be satisfactorily carried out, or other remedial means can be put in operation to cause the uterus to contract sufficiently. And in this readiness of application lies the true value of external compression when early made, as a preventive and effective power in post-partum hemorrhage, and of irregular contraction of the uterus after placental delivery in multiparous women."

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62. *Retro-Uterine Hæmatocele.*—Mr. W. F. WADE, Senior Physician to the Queen's Hospital, Birmingham, calls attention (*Lancet*, Sept. 10, 1864) to a hitherto unrecognized method in which nature effects a cure in these cases. "It must be premised," he says, "that by retro-uterine hæmatocele I mean an effusion of blood into the cavity of the peritoneum, to the lowest point of which it falls by gravitation. This point is, in the vast majority of cases, the pouch formed between the rectum and uterus, known as 'Douglas's space.' It is not doubtful that blood may be, in some cases, effused into the sub-peritoneal cellular tissue. It is, however, very doubtful whether in that case it gives rise to those symptoms of peritonitis which form so prominent a clinical feature of the intra-peritoneal variety. A case published by Dr. Lever, and my own experience of the consequences of aneurism rupturing behind the peritoneum, led me to believe that an accident of this kind does not lead to peritonitis. A careful study of published cases of retro-uterine hæmatocele affords most convincing evidence that no case has yet occurred in which symptoms of peritonitis during life had been found after death to depend upon hemorrhage purely extra-peritoneal. That is to say, no published dissection of retro-uterine hæmatocele proves the existence of an extra-peritoneal variety. The spontaneous cure of this disease has hitherto been supposed to be confined to four methods, or to combinations of these methods—

a. Absorption of the blood.
b. Its escape by rupture of the rectum.
c. " " " bladder.
d. " " " vagina.

"Without disputing the possibility of the sac[1] emptying itself into the vagina by perforation, it is a singular fact that in no instance (within my knowledge) has the opening been seen, though the speculum has been frequently employed in such cases. Further, the assumption which has seemed to render this theory independent of actual observation is an untenable one. The argument by which this theory is sustained is evidently (though not categorically stated) as follows: Escape of altered blood per anum indicates necessarily perforation of the rectum, since there is no natural channel by which the cyst contents could enter the rectum. So escape of altered blood per vulvas indicates necessarily perforation of the vagina, since there is no natural channel by which the cyst contents could enter the vagina. The fallacy lies in the assumption that there is no natural channel by which the cyst contents can enter the vagina, and so escape per vulvas.

"I have come to the conclusion that the contents of the cyst may get into the vagina by an already existing route—viz., through the Fallopian tubes and uterus; and observation has led me also to conclude that this is the method which nature employs in a large number of cases either independent of, or in conjunction with, some of the other methods above enumerated. In the first place, ovarian tumours are known to have emptied themselves through the uterus. When labour-like pains precede for some time, and at last culminate in, a sudden gush of fluid per vaginam, followed by a subsidence of the extrusive pains, we may justly infer that the fluid has found its way into the uterus, and been thence expelled. In 1850, Dr. Hill, at that time Demonstrator of Anatomy in the University of Dublin, informed me that he had had an opportunity of introducing the speculum during the continuance of such a discharge, and had seen the ovarian fluid escaping from the os uteri. This discharge was attended with the labour-like symptoms referred to above. The tumour was cured.

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[1] By "the sac" is meant that portion of the peritoneum in the cavity of which the blood is retained, and which is separated by inflammatory adhesions from the general peritoneal cavity.

"Such an escape might take place in one of four ways:—

"*a.* By direct application and adhesion of the fimbriated extremity to the wall of the ovarian cyst, and the subsequent bursting of the latter at that point.

"*b.* By a similar adhesion of the ovarian cyst to the fundus uteri, and subsequent rupture at that point.

"*c.* By rupture of the sac, and extravasation of its fluid into the peritoneal cavity, and by subsequent perforation of the fundus uteri.

"*d.* By similar rupture and extravasation into the peritoneum. The fluid subsequently percolating through the Fallopian tubes into the uterus.

"The last supposition is, to my mind, the most probable one; and the fluid in such a case would, after the sac had ruptured, lie in exactly the same relation to the Fallopian tubes that the extravasated blood does in retro-uterine hæmatoceles of any size.

"The possible escape of ascitic fluid through the Fallopian tubes is not mentioned by any medical author within my knowledge. Yet I remember seeing a case, when a student at the Meath Hospital, where I had no doubt that an ascites was so cured. It is proper, however, to add that Dr. Stokes, under whom the patient was, declined to give any opinion as to the channel by which the fluid had escaped. A woman, aged about fifty, had been long ill of heart disease, which at last produced general anasarca and copious ascites. One night she was seized with labour-like pains of great severity. These, after lasting for some hours, were attended and relieved by a large gush of clear fluid from the vagina. For several days this discharge persisted, sometimes in gushes preceded by uterine pains, sometimes continuously trickling. There was progressive diminution, and finally a total disappearance of the ascites. Having left the Meath, she subsequently entered Sir Patrick Dun's Hospital a few weeks later, and there died of a return of the general dropsy. At my request the uterine organs were particularly examined. There was no ovarian disease, and no marks of any former preternatural opening into the uterus. The tubes were normal. There could be no doubt that in this case the fluid came from the uterus. By what process? There may have been possibly a hydrometra producing a derivation from the peritoneum. If so, why did it cure the ascites only without affecting the dropsy elsewhere? It seems to me a more simple and probable explanation that the ascitic fluid trickled directly into the womb through the Fallopian tubes. The wonder really is, not that this should happen once, but that it does not more frequently occur.

"To return now to uterine hæmatoceles. Dissection has proved that in some of these cases the fimbriated extremities of the tubes lie gaping in the sac; that the tubes themselves, through a greater or less portion of their extent, are filled with a fluid identical with that remaining in the cyst. This has been supposed to prove that in such cases the blood has been originally poured out by the tubes themselves into the peritoneum. But the facts are quite as much in favour of my supposition that the blood has entered them from the peritoneum. There are, however, other facts and arguments which do not cut both ways.

"Certain cases have been recorded in which blood, more or less altered in the way that the intra-peritoneal blood is known to alter, has entered the vagina, not through a fissure in its wall, but through the uterus. It has been occasionally seen to do so by means of the speculum. Or the uterine sound, on its withdrawal, has been found to be smeared with fluid of this kind. Or, again, the symptoms preceding and attending the discharge have been of such a character as I hold to be sufficient circumstantial evidence of a uterine flow. In such cases it has been too hastily taken for granted that these discharges are necessarily menstrual. And since they are commonly attended with diminution of the tumour, menstration has been most incorrectly inferred to be, if not an actual method of cure, at all events a favourable circumstance. It is possible that menstruation may promote the absorption of the fluid, but in my experience it is much more likely to produce an increase in the effusion, and I always anticipate the first menstruation during convalescence with a considerable amount of anxiety and fear of relapse. But it cannot be conceded that such uterine discharges always are menstrual. In the first place they do not always occur at a menstrual epoch. Secondly, they resemble in odour, consistence, and colour the fluids which are discharged through a fissure of the rectum, or which are found in the cyst after death. Lastly, a real and natural menstrual discharge at a proper epoch may precede or follow them. The patient will always observe that the one discharge is like that of ordinary menstruation, the other not. These discharges will reduce the size of the tumour in the very cases where menstruation of an ordinary character has not diminished or has actually increased them. As illustrations of the correctness of these views the following references may be interesting:—

"1. In an hospital case of my own, diminution of the tumour attended a discharge of fetid and discoloured sanious fluid, both while she was in the hospital and afterwards. This discharge was not continuous, and was accompanied by cramp-like pains in the region of the uterus; no vaginal fissure was ever seen. A discharge of ordinary menstrual appearance was associated with decided increase in the volume of the tumour.

"2. In a patient of M. Tardieu (Voisin's fourth case) great diminution of the tumour coincided with a sanguineous discharge, ascertained by the speculum to be from the uterus, and occurring at a non-menstrual epoch, attended with sharp expulsive pains.

"3. In another patient of M. Tardieu at Lariboisière Hospital (Voisin, No. 5) no decrease of the tumour was noted at a menstrual period; whereas there was diminution from the size of a fœtal head at eight months to that of a middle-sized apple after the discharge per vaginam, with severe uterine pains, on three separate days between twelve and twenty-one days after a menstrual epoch. After remaining stationary for some time, the tumour again decreased after other discharges at a non-menstrual period.

"4. In Voisin's fifteenth case diminution of the tumour coincided with a menstrual epoch and discharge, but this latter was partly blackish and partly red. There is no reason at all why discharge of altered blood in the way I suggest should not take place at the same time as a menstrual flux.

"5. In another case, under my care at the Queen's Hospital, the altered blood was seen, by means of the speculum, to ooze from the os uteri, and it oozed faster when pressure was made upon the abdominal tumour.

"6. In another case, lately under my care, a discharge of altered blood was also seen to ooze from the os uteri. The patient observed that is was totally unlike any menstrual flow she had ever had. In this case and in others the discharge has been more copious when the patient has been up and about. I therefore now allow these patients to rise as soon as the absence of peritonitic symptoms enables them to do so with comfort, instead of keeping them in bed as formerly.

"7. Voisin's thirty-third case is headed 'Retro-Uterine Hæmatocele, apparently due to excesses of all kinds, in a Woman subject to Menorrhagia; Spontaneous Evacuation of the Fluid by the Vagina; Cure.' The case is too long to quote entire. It is fortunately easily accessible to those who are interested in the subject. The diagnosis was made by M. Nélaton, and admits of no doubt. I extract the following: 'On the 7th of February,' after several days of severe pain in the lower part of the body, 'there came from the vagina a very abundant sanguinolent flux, consisting of a brownish liquid, compared by the patient to coffee with milk or to chocolate. 8th. Discharge presents same character; no clot. 9th to 12th. The discharge continues very abundant, but the blood is of a clearer colour. 12th and 13th. Passes some brownish clots, the size of which she cannot tell. The blood has again become darker. 14th. Since the discharge commenced the pains have sensibly diminished, so much so indeed that the patient feels pretty well. 15th. The bloody discharge stops to-day. The pains are less; but she feels very weak, perspires continually, and is markedly thinner. The skin has become more pale; the gums and conjunctivæ a little blanched. The tumour has much diminished in size; palpation shows that the contents are now partly solid. M. Nélaton thinks that there has been perforation of the vagina, and that through this the liquid part of the tumour has been evacuated, and that there has been at the same time a discharge of blood from the uterus; but he does not think that this discharge has been menstrual, for she menstruated on the 19th of last month, and this discharge commenced on the 7th. But the patient tells me (M. Robin-Massé, the reporter) that for some time the menstrual epoch has continually advanced, and returns about every three weeks.' It is to be remembered that in this case the disease was developed in conjunction with menorrhagia. And at the next return of the menses there was a return of pain, which not only preceded the discharge, but also accompanied it, ceasing when the discharge ceased; whilst in the foregoing account it will be noticed that the pains began to be relieved as soon as the discharge commenced. The only question is, whether the flow in this case was altogether uterine, or partly through a perforation of the vagina. This can now never be decided, as the speculum was not used. It is not like the way in which the fluid is discharged by a perforation of the rectum.

"8. In Voisin's thirty-sixth case there was rapid diminution of the tumour after a discharge, firstly, of serous, and subsequently of sanguinolent fluid. After the discharge had become sanguinolent, M. Voisin examined the patient with the speculum, and found no orifice in the supero-posterior cul-de-sac. The fluid, he says, came from the uterus. The discharge occurred at a non-menstrual period. This case is an illustration of what I have myself seen in two cases—viz., the discharge of a serous fluid, probably, I think, from the cavity of the cyst. But in my cases it occurred when the patients were getting well, and the functions of the peritoneum approached restitution.

"9. In Voisin's twenty-seventh case: 'Sanguineous discharge from vagina; lumbo-sacral pains, intermittent and at times expulsive; death. Fallopian tubes distended with blood, adherent to ovaries, but *communicating* with the cavity of the hæmatocele.'

"*Recapitulation.*—In cases of hæmatocele, we observe a discharge of altered blood, similar to that which flows from a perforation of the rectum, preceded by uterine pains, and seen to flow from the uterus; followed by rapid diminution of the tumour, and increased solidity of it, occurring at a non-menstrual period, the colour and odour of it being dissimilar to those of the menstrual fluid. I submit that we may infer that this fluid comes directly from the cyst into the uterus, into which it probably finds its way through the Fallopian tubes."

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63. *Mortality in the Vienna Lying-in Hospital.*—Prof. SPAETH of Vienna has given a sketch of the Lying-in Hospital at Vienna from 1784 to 1863. The hospital was established by Joseph II. in 1784. From 1784 to 1822 it was under the direction of Simon Zeller and J. L. Boër. The number of births during that period were 71,395, and the number of deaths 897; the mortality being about 1.25 per. cent. The epidemics during this period of thirty-seven years were not severe. From 1822 to 1833—the time when the second clinical lying-in department was established—32,336 women were delivered; and of these 1714 died, being a mortality of 5.30 per cent. During these eleven years epidemics were almost constantly present. From 1833 to 1839, Klein and Bartsch directed the hospital; and during this period there were in the first clinique, 12,253 births and 902 deaths, and in the second clinique 9354 births and 620 deaths; consequently, the mortality of women was 7.36 and 6.62 per cent. Puerperal diseases were almost constantly present; but were most fatal in the year 1836–37. During the next period, 1839 to 1847, the management of the two cliniques was altered, the physicians having exclusive charge of the first clinique, and the second clinique being chiefly under the management of midwives. The effect of this change was well marked. The mortality in the second clinique diminished; of 21,155 women confined, 810, or 3.82 per cent., died; whilst under the fearful epidemic of 1842–43, the mortality at the first clinique increased to a terrible height, 2482, or 10.14 per cent., dying, out of 24,455 confined. The greatest mortality occurred in December, 1842, reaching, in fact, to 31.3 per cent. In 1847, Dr. Semmelweiss called attention to the origin of puerperal diseases, through infection from decomposed animal matters, and

took measures for furthering cleanliness; ordering all students to wash their hands in chlorine water before attending the woman. Hereupon, the mortality rapidly diminished; and up to 1849 (when Semmelweiss gave up the direction), of 6589, only 142 died, or 2.15 per cent. At the same time, in the second clinique, the mortality was also low. From this time up to 1864, the mortality has never been so great as in former times; although the hospital has been visited by severe epidemics. In 1854 and 1855, there was a mortality of 9.1 per cent. and 5.4 per cent. in the two cliniques. The last epidemic occurred in the winter of 1861–62, and produced a mortality of 7.7 and 10 per cent.

Professor Spaeth discusses the cause of these visitations. They cannot, he says, be cosmical or telluric; because outside the hospital, in the neighbourhood, no such mortality has occurred. Neither does it appear that these visitations had any connection with epidemics of typhus, scarlatina, measles, etc.; for it often happened that, when these diseases were raging, the Lying-in Hospital was in a healthy condition. For does it appear that cold has any direct influence on the health of puerperal women: and if these diseases are more common in winter, the cause is to be ascribed to the want of opening the windows. For these and other reasons, the professor is convinced that the cause of puerperal epidemics lies in the hospital itself, and that its influence is exerted either during labour or within an hour after its completion. The chief, and probably the sole, agent of puerperal fever is decomposing animal matter, whether arising in the hospital or brought into it from without. The cure for the evil is, therefore, evident; great cleanliness, good ventilation, and separation of the sick from the sound. Semmelweiss was too exclusive in considering that the puerperal fever was caused solely by the infected fingers of the dissecting student.—*British Med. Journ.*, April 30, 1864.

HYGIENE.

64. *Preventive Medicine as Illustrated in the Proper Use of Food.*—[Mr. ERASMUS WILSON read a paper on this subject before the Metropolitan Association of Medical Officers of Health (Dec. 17, 1864). His views are interesting and well worthy of consideration, though we must confess we are not satisfied of the accuracy of all of them. He seems to us to have not taken into account the difference of capacity of stomachs to digest food, the alteration of diet required at different seasons, and he has also, we conceive, underrated the nutritive properties of some articles, as for example rice.—ED. AM. JOURNAL.]

"The subject which I shall endeavour to illustrate is contained in the following propositions: Firstly, that good and sufficient food is necessary to health; and, secondly, that insufficient and inferior food is a fertile source of disease. And, as a deduction from these propositions, applicable to your particular study, I will venture to add, that good and sufficient food is an element of the first importance in the prevention of disease. By food we are to understand that kind of aliment which best conduces to nutrition, growth, and strength; which is capable of producing the most complete development and highest amount of power of the human being; which, in one word, creates health; for in health we have the only trustworthy antagonist of disease. The art and the science of the physician are alike vain, in his combat with disease, unless he can bring about health; and his first and chief aim is to restore health, being fully assured that if he can succeed in renovating health, disease must be extinguished. So, the end and aim of existence of the officer of health may be said to be, to develop the means by which health may be made to occupy the ascendant in the human economy. We have one grand example before us, in which Nature prepares the food of the human being with her own hand, and administers that food at stated periods and according to a prescribed rule. We may ask, What is that food? What are those periods? What is that rule?

"The food is milk; the first food of the newly-born man; an animal food.

The periods are determined by the sense of appetite or want; and the rule which determines these periods is the space of time occupied in digestion and assimilation. If we examine this food we shall find that it is composed of a variety of principles; if we regard the periods we shall find that they present a perfect regularity of time; if we examine the rule we shall find that it has its origin in the necessities of the animal economy. And we may fairly deduce from our inquiry the three following laws:—

"The food of man must possess a variety of composition, in which the animal principle should predominate. The food of man must be repeated at regular intervals, such intervals during the waking hours being not less than three in number. And, thirdly, looking to the fact that the desire for food originates in the necessities of the individual, that the food should be uniformly nutritious. Let me put these propositions in a different manner:—

"Man requires variety in his food.

"His meals must be regular.

"Every meal should be equally nutritious.

"Looking to the milk as the food of the infant man, we see the importance which attaches to the perfect purity of the milk, its sufficient quantity, and its regularity of supply; in other words, of a healthy mother—of a mother to whom the nourishment of the future man is a primary and not a secondary purpose of life—of a mother whose instincts harmonize with those laws of nature which govern her infant and should equally govern herself.

"But let us take the reverse of these propositions: an unhealthy mother; unwholesome milk; irregularity of exhibition of that milk. I need hardly say that the results must be an unhealthy, weakly child; or, in other words, a fractious, crying child, the subject of vomiting, colic, convulsions, painful dentition, scrofula, rickets, tabes, etc. Is not this preventible disease?

"Let me illustrate the subject a little further by reference to my own practice. Eczema is not infrequent in infants; it is apt to commence at the end of the second month, and it sometimes lays the foundation of a life of suffering. Now, eczema in infants is, in every instance, an aberration from the laws of health in the composition and in the supply of the mother's milk. Sometimes the source fails, and is to be made up artificially; and we all know the extreme difficulty of supplying infants with a proper substitute for their natural diet, of rearing them 'by hand,' as it is popularly termed. In this endeavour we cannot attain either the just variety of composition or the ever-ready supply.

"But, as preventive medicine is especially interested in remote predisposing causes, let me adduce a few illustrations. A lady was called upon to give a dinner party a few weeks after her confinement; the excitement of that dinner party cost her infant an eczema. We might go further, and say that the lady transgressed a law of nature, and was punished in her offspring. A young mother hurried from the metropolis to the seaside in the month of November to attend the sick couch of a parent; she was chilled by her journey, her infant was six weeks old; the following day the child was seized with eczema. A lady, recently confined, was worried by a lawsuit; the source of her milk dried up, and remained lost for three days; a similar occurrence took place a few weeks later, and the child was visited with eczema. A poor woman, a neighbour of my own, was confined in the upper story of her house, her husband was dying in the room below. We might ask: Could the child escape under such circumstances? No: it was covered a few days after its birth with eczema. Within the last week a young woman brought her babe to me covered with eczema from head to foot. The colloquy which took place between myself and the parent was as follows: 'How old is your child?' 'Four months.' 'How long has he had this eruption?' 'Since he was three weeks old.' 'What occurred immediately before the appearance of the disease in your child to cause you annoyance?' 'I was vexed by my servant.' 'And what since?' 'I have been vexed to see my poor child in this miserable state.' 'Have you sufficient milk for him?' 'No: I think I must begin to feed him.' 'By all means do so; that is your only chance of rearing him at all.' I could multiply cases of this nature almost indefinitely were it necessary; their relation to the subject before us is self-evident, and I adduce them only as examples of causes disturbing the healthy composition of the milk, and consequently engendering disease in the child.

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"But a period comes when milk is no longer the diet of children, and when custom, originating, as we have seen, in Nature's promptings, has determined the necessity of three meals in the day. The infant demands more than three meals, and makes no distinction between the day and the night. The day of the infant is a day of twenty-four hours; the day of childhood, as of the remainder of life, has a duration of twelve to sixteen hours. The three meals at present under consideration are the morning meal, the mid-day meal, the evening meal. These meals represent the wants of the body arising during the intervening interval. The morning meal is intended to supply the moderate waste of the night, the mid-day meal the active waste of the morning, the evening meal the active waste of the afternoon. The amount of the three periods of waste is pretty equal; the amount of the supply should be equivalent to that of the waste.

"I am desirous of impressing upon my hearers my opinion and firm conviction that food is not only a necessity, but in civilized life a threefold necessity, and that the three meals should each represent the third of the nourishment of the day, and be so apportioned as to comprehend an equal amount of variety and an equal amount of nourishment. In the primitive life of the labouring class this law is fully appreciated, and is acted upon to the full extent of their means. With the exception of a somewhat more bulky mid-day meal, the morning meal and the evening meal do not far diverge from the standard of the mid-day repast.

"But the educated classes are apt to fancy that they possess a knowledge superior to that of Nature, and the result is a perversion of the law of nourishment that leads to the development of debility and disease. A careful, well-meaning mother, from purest ignorance—another expression for superior knowledge, the 'little' knowledge that is so proverbially dangerous—will tell you that she conforms to the law of Nature in providing for her children three meals in the day. She will describe those meals as breakfast, dinner, and tea, and you will find the composition of those meals to be as follows: A vegetable breakfast, namely, bread and butter, with tea and a little milk; a dinner half animal and half vegetable; and a 'tea' vegetable like the breakfast. Here, then, we find education bringing about a total change in the diet of man. Born an animal feeder, he is quickly transformed into a vegetable feeder; that is, more than two-thirds of his diet is vegetable and the remaining third only animal, the exact opposite of that which I consider should be the standard diet of children, namely, one-third vegetable and two-thirds animal.

"My deduction from these premises is, that children are almost universally under-fed, and that the majority of the diseases of children arise from the debility of constitution induced by this habit of under-feeding. If I am right in this view, preventive medicine may do much in the prevention of disease by correcting an error so widely spread.

"The diet of children of all ages should be, a substantial breakfast, with animal food in some shape; a substantial dinner of meat, vegetables, and cereal pudding; and a substantial supper, also consisting, in part, of animal food. The drink may be milk, tea, cocoa, and, possibly, beer. I would call this the diet of health; a diet capable of making a strong body and also a strong mind; and a diet capable of preventing disease. Compare it for an instant with the milk-and-water and bread-and-butter diet of some establishments; the meagre dinner of meat, and the miserable grouting of rice and amylaceous pulp. Rice and amylaceous food should have no place in the diet of health, but should be reserved for the sick room.

"Born in prejudice and matured in prejudice, it is the struggle of a lifetime to throw off the trammels of prejudice. We are apt to attach a peculiar signification to the terms which we are in the habit of employing. Ask a person what he usually takes for breakfast, and he will pretty certainly begin his enumeration with the word 'tea,' the mere drink of the meal; it is, in truth, with him a mere break-fast, instead of being, as it ought to be, a substantial morning meal. The dinner of labour is the luncheon of fashion; then follows the mildly alkaline and stimulating drink that is termed the 'tea;' and last of all comes the supper, the late dinner of fashionable life. We have, therefore, before us a succession of three meals and an intermediate drink, but the drink precedes the last meal; and, therefore, the orderly matron, who is more attentive to her 1, 2, 3 than she is to the intention of the daily fare, prescribes for her children breakfast, dinner, and tea—two slops and a meal. But let her, in good English phrase, call the children's meals breakfast, dinner, and supper, and then we immediately obtain two dinners and one slop, the breakfast—an obvious improvement. I have secured to many a child a reasonable evening meal by suggesting to the mother the mere use of the word 'supper' as the name of the third meal. No human being could call bread and butter and tea by the hearty name of supper.

"Assuming that the amount and richness of the supply of food should be determined by the offices which it has to perform, there is no period of life when more food is required than in childhood and youth. The hard-worked labourer in a long summer's day scarcely exhausts a greater quantity of nutritious matter than a growing boy of ten or twelve years of age; in the labourer the consumption is waste; in the growing boy it is bestowed in the construction of the body, in developing and building up the future man. And it is no uncommon thing to find that although the general construction of the body has been fairly performed, there is some one organ of the economy that has fared less well than the rest, and that part not uncommonly the skin; hence the origin of acne, of the ringworms, *et hoc genus omne*.

"If it be admitted that food is the source of the elements of which the body is composed, what kind of body can be expected in the case of a deficient supply of food, whether that deficiency proceed from actual want or from some perverse theory of refinement founded on a false conception of the nature and objects of food and of its direct convertibility into the flesh and blood of man? Parents are too apt to take their own stomachs as the standard of diet of their children: a cup of tea and a slice of toast suffices for them, so it must suffice for the little ones. I knew a lady who brought up her children on mutton alone, because she herself could digest nothing but mutton. Her children were a feeble, puny, sheepish race, always in the doctor's hands. A mother, in anticipation of the full meal at seven o'clock, can afford a light lunch; but she unfortunately concludes that, because a light midday meal is good for her, a spare dinner is equally proper for her children. She has heard somewhere that suppers are heavy and interfere with sleep; so, the children must be content with their tea, and go supperless to bed. Parents have rights over their children, but not the right of feeding them in such a manner as to make them the subjects of disease. Such parents become the authors of a puny and degenerate race, and are unintentionally traitors to their country.

"If the two periods of life already adverted to be important in their influence on the future man—namely, the period of infancy, ranging from birth to the age of two years, and the period of childhood, ranging from two years to seven years—the next two periods—namely, those of boyhood and youth—are equally so. While the food of the infant and the food of the child are abundant and regular, the food of the boy and the food of the youth should be the same. Both are occupied in the great business of growing life; on both are dependent the future man, for his strength and for his manhood.

"Boyhood and youth have besides other duties to perform—namely, cultivation of the mind or education; and then the question arises whether these two important processes are equally provided for in the training of our youth. To be well instructed mentally, they must be properly fed physically; and at no period of life are the three ample meals of mingled animal and vegetable food so necessary. There must be no putting off of the stomach with bread-and-butter and slop as the effigies of two of the three meals of the day; but a generous intermingling of all the elements that constitute a sound and nutritious diet.

"It is notorious that the importance of a substantial regimen is not sufficiently recognized in scholastic establishments; and the consequence to the pupils is debility and disease, a constant appeal to the doctor for tonics *vice* food, a frequent outbreak of ringworm, and, worse than all, the development of scrofulous tubercle, and the laying of a foundation for future organic disease and morbid life, or premature death.

"Ringworm is essentially a disease of defective nutrition; and those even, who, looking no deeper than the surface, believe the ringworm to be the growth of a plant in the horny covering of the skin and actively contagious by means of its seeds, are the first to admit that the seeds are incapable of vegetation without the presence of a morbid soil, of an unhealthy condition of the skin and of the economy favouring their development and growth.

"In all these examples, as it appears to me, the one most pressing want is food, abundant and regular; and could we secure this necessity of our nature to all our fellow-creatures, one-half of the whole of the disease which pervades the world would be spared.

"I must not be supposed to undervalue light, and air, and cleanliness, and exercise, the kindred of food; but if it were my commission to improve the human race; to produce finer, stronger, and better men; to extinguish disease; I should begin with food; and if it were my duty to lay down rules for the prevention of disease, I should, in the first instance, endeavour to secure the co-operation and influence of man's first and best friend—his stomach."—*Med. Times & Gaz.*, Jan. 7, 1865.

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65. *Hospital Hygiene.*—The Surgical Society of Paris, which for upwards of two months were engaged in discussing this subject in reference to the reconstruction of the Hôtel Dieu, has finally adopted the following resolutions:—

"The Surgical Society of Paris, desirous of contributing, to the extent of its power, to protect the practice of the art of Surgery from the fatal influence of nosocomial complications, and to relieve science in future from its responsibility in the matter, has deemed it opportune, on the occasion of the projected reconstruction of the Hôtel Dieu, to call to mind, or establish, the following principles: 1. A hospital should be located in an open spot upon a declivity. The space occupied by it should be of large size, fifty square metres per patient constituting a minimum, which should be exceeded as far as possible, and which should increase progressively with the number of patients. 2. The atmosphere of a hospital will be purer in proportion to its distance from crowded localities. In the middle of towns, hospitals should only be kept up of limited size for the admission of urgent cases, and for the purposes of teaching. This would prove not only a sanitary, but an economical measure, enabling great towns, like Paris, to erect hospitals on very large and inexpensive sites. 3. Good hygienic conditions are easily attainable in hospitals of from 200 to 250 beds, while it becomes almost impossible to realize them in large towns if double these numbers be exceeded. The expenses of all kinds are not proportionally greater in these than in the populous hospitals. 4. The elements of the atmosphere commingling especially in the horizontal direction, we must obviate by additional space the effects of contact and proximity constituting overcrowding, and which are propagated from patient to patient, from ward to ward, from building to building. 5. It is not only by increasing the cubic space allowed to each patient, but especially by increasing the superficial space, at present so insufficient in our hospitals, that we shall be able to struggle effectually against contagious influences. For similar reasons, the stories of a hospital should not be numerous, each of these engendering a more or less vitiated layer of air. According to rigorous hygienic requirements there should never be superposed more than two ranges of patients. 6. It would be an illusion to believe that a large supply of air within the wards will compensate for a want of space and external aëration, and that artificial ventilation can supply the place of the preceding conditions. Nothing will serve as a substitute for an insufficiency or absence of natural ventilation. 7. The buildings constituting the hospital should be completely isolated, having the same aspect, and freely exposed to the rays of the sun, and to the action of wind and rain. They should be disposed in a straight line, or in parallel lines separated by long intervals of from 80 to 100 metres, so that an effectual separation and a free and easy external ventilation may be obtained. 8. Small wards of from fifteen to twenty beds are easily taken care of; the patients are less in each other's way; the chances of direct contagion are diminished; and all impurities are more rapidly removable. Such should be provided for ordinary patients, independently of the special arrangements made for certain categories of disease requiring still greater space or isolation in separate chambers. 9. The furniture of the wards should not obstruct the circulation of air; and the medical officers should possess the right of removing the curtains of the bed if they deemed this desirable. 10. The wards should be separated from each other by landings and other rooms; and it would be of advantage that one of these should be used for the reception, during the day and at meals, of all patients able to get up, which would lead to a daily, though incomplete, evacuation of the wards. 11. The periodical and regular evacuation of the wards, and their remaining unoccupied during several months in the year, have been attended with such advantages in the French military hospitals and some foreign hospitals, that the general adoption of this measure is desirable, and imperiously so during the prevalence of an epidemic. 12. Everything should be so disposed that all fetid and infecting matters, dejections, old dressings, foul water, etc., may be rapidly destroyed or removed, and never allowed to remain within or in the proximity of wards occupied by patients, or to give rise to any appreciable emanation.

"Enlightened by a prolonged discussion, in which many of its members have taken part, the Society would regret if, in the projected erection of the Hôtel Dieu, the administration misunderstood or neglected some of these principles. It believes that neither the wants of the population nor those of medical instruction require a hospital of 600 beds located in the city; and that such a hospital would be in a bad condition with respect to site, space, number of beds, disposition of its buildings, and ventilation. It is desirous that its views may be taken into consideration, and that they may contribute to the adoption of a plan conformable with the fundamental exigencies of hospital hygienics."—*Medical Times & Gaz.*, Dec. 17, 1864.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

66. *Poisoning by Laudanum treated by Electro-Magnetism and Belladonna.*—[The antagonistic powers of opium and belladonna, first pointed out in this country, and of which numerous examples have been recorded in this journal within the last few years, receives further confirmation from the following case communicated by Dr. Prestwood Lucas to the *Medical Times and Gazette* (Feb. 25, 1865):—Ed. Am. Journal.]

"A. P., aged 11, at 6.45 P. M. of December 15. 1864, swallowed an ounce and a half of laudanum. sent to her by mistake for a black draught. She soon became very drowsy, and perspired freely. Her breathing gradually becoming very heavy and oppressed, her mother at length became alarmed, and medical aid was sent for.

"I arrived at the house at 9.15 P. M., and found my friend Dr. Davies already there, preparing to introduce the stomach-pump. The child had been kept walking about the room between two persons, who perseveringly employed the usual physical means of rousing her consciousness. Her face was cold and livid; hands, arms, and feet cold; pupils contracted; pulse 96. She could be roused by shaking and loud speaking, and then knew every one around her, looking at them with a half-intoxicated expression—understanding all that was said to her.

"At 9.30 P. M. two scruples of sulphate of zinc dissolved in warm water were injected into the stomach. Only faint traces of laudanum were found in what was brought off the stomach, the remainder of that which had been swallowed having passed into the system.

"The stomach was afterwards well washed out at intervals with repeated injections of warm water, each injection being followed by one of strong coffee. A sinapized foot-bath, and, later, sinapisms to the calves of the legs were used.

"Instead of being incessantly walked about the room, she was taken to walk for about a hundred yards and back in the open air, and allowed to rest in the intervals. The drowsiness, however, kept increasing. At one o'clock A.M. she was comatose; the breathing stertorous; face flushed; respiration only six in a minute; pulse 100, small and feeble; pupils much contracted; could still be partially roused.

"At 1.30 could not be roused by shaking or loud speaking; occasional subsultus of the muscles of the arms and twitching of the eyebrows; lower jaw dropped, showing an incessant to and fro motion of the tongue; respiration 6; breathing stertorous.

"2.40. No improvement. Electro-magnetism applied at the upper cervical region and over the epigastrium, chest, and face. This soon roused her, so as to enable us to give her a teaspoonful of a solution of extract of belladonna of eight grains to the ounce.

"2.55. Electro-magnetism reapplied, and a teaspoonful of the solution given. Is more easily roused, but instantly falls asleep again; breathing still stertorous.

"3.20. Electro-magnetism; an enema administered of gruel, with six drachms of brandy and a teaspoonful of the solution.

"3.50. Electro-magnetism and a teaspoonful of the solution. She now rose up to the sitting posture, and got off the couch to walk across the room, supported by two persons, looking about her with an alarmed and bewildered expression, but apparently not recognizing any one. She was, however, sufficiently awake to drink a cup of strong coffee, taking the cup in her hand. Face becoming more flushed; pupils less contracted; pulse 104; respiration 6; less stertor when asleep.

"4.10. Electro-magnetism and a teaspoonful of the solution. Is easily roused; now sees and knows us.

"4.40. Enema as before, with the addition of two drachms of aromatic spirit of ammonia. Pulse 136; respiration 8; no stertor; face highly flushed.

"5.50. Electro-magnetism and a teaspoonful of the solution. Has now received sixteen grains of extract of belladonna. No stertor; respiration 8, attended with a soft sighing moan; pupils moderately dilated; is quite easily roused when spoken to; answers questions and begins to notice objects.

"From this time till 7 A.M. she was allowed to remain sleeping, reclining in an easy position on her left side, with her shoulders and head raised. She was only spoken to occasionally, to ascertain that she could be easily roused. A diffused flush overspread her face and forehead, and a pleasant warmth and moisture the whole body. Pulse from 140 to 150; respiration 11. At 12.30 P.M. was sleeping, breathing softly; very easily roused, and perfectly conscious when awake. Respiration 12; pulse 150; pupils moderately dilated. Had much thirst, and some irritability of stomach and vomiting in the afternoon. Next day pupils were much dilated. She had slight diarrhœa, and afterwards speedily recovered.

"In treating such a case as the one now detailed, of course the first and indispensable thing to be done must be to empty the stomach of its contents as speedily as possible, and then to wash its mucous surface thoroughly by injections of warm water. The usual methods of rousing the patient's consciousness by incessantly walking about, slapping their hands and limbs, etc., we soon forbade, believing that, owing to the fatigue and exhaustion produced by forced muscular efforts, much more harm than good would be done. With a like feeling we were very reserved in our use of electro-magnetism, apprehensive of the possible nervous exhaustion which a continued use of so powerful an agent might induce. Having first roused the patient out of the profound coma in which she lay, we afterwards applied it only just enough to enable her to take the solution which we gave her. We then allowed her to sleep until the next dose was to be given, and so on. We employed stimulants, external and internal, as has been described; but we could not help attributing the happy result in this case chiefly, if not altogether, to the influence of belladonna in counteracting the effects of the opium, of which so large a quantity had been taken into the system. But, at the same time, we found in electro-magnetism an invaluable resource; without it we could not have roused our patient to swallow anything.

"One of our highest authorities on the subject of poisons, to whom the particulars of this case have been communicated, considers the result to be owing to the vigorous measures we adopted, and believes that the belladonna had little or nothing to do with it; but as regards vigour of treatment, the usual methods of rousing the patient by physical efforts and stimulants completely failed. The narcotism became more and more profound, until at length the child could not be roused at all out of her unconsciousness. It was not until we had recourse to electro-magnetism and belladonna that any signs of improvement took place. If recovery was solely due to electro-magnetism, a very moderate application of it was sufficient in this case, and it would be well to remember this in the treatment of similar cases. But, it may be asked, how could a child of 11 years take sixteen grains of extract of belladonna in less than three hours, without experiencing any of its usual toxical effects, unless for the counteracting influence of the opium which had been previously taken? More importance might be attached to this argument had not Dr. Fuller shown, in a most interesting paper read by him to the Medico-Chirurgical Society, and published in the *Medical Times and Gazette* in July, 1859, the extraordinary tolerance of belladonna in young subjects. He described the tolerance of the drug as being so great that 'one child of 10 years took seventy grains of extract of belladonna daily, and a total amount of rather more than two ounces in twenty-six days. Another child of 14, to whom atropine was administered, took no less than thirty-seven grains in eighteen days! Whilst in adults two grains of the extract of belladonna daily would often induce vertigo and dizziness, and he found he could not establish a toleration of the larger doses, as in children.'

"This yet unexplained tolerance of belladonna in young subjects is, however, a question apart from that of its physiological relations to opium. The present case may not be considered as altogether fair evidence of the efficacy of belladonna, inasmuch as electro-magnetism was also employed in its treatment. But in Dr. Anderson's cases, in India, of opium poisoning, belladonna was the only remedy used. One of his patients in the course of thirty-six hours had swallowed two ounces of solution of hydrochlorate of morphia for delirium tremens. He was in a state of profoundest narcotism. He was made to swallow a drachm of tincture of belladonna in water every half hour. After the third dose the pupils began to dilate; in four hours and a half he was out of danger, having taken six drachms of the tincture. He also relates a similar case in which an ounce of the tincture in three ounces of water was given between 9 and 9.30 P. M., and in the course of the next half hour two drachms more were taken. At 2 A. M. all indications of opium poisoning had disappeared.

"On the other hand, as to belladonna poisoning, Mr. Bell's two cases are most striking. His patient had had a fourth of a grain of sulphate of atropine in solution injected over the sciatic nerve. Its toxical effects in due time declared themselves, and the patient's condition became 'altogether alarming,' and was without any indication of improvement. A strong solution of morphia was injected into the gluteal region of the opposite side, which happened to be next to the edge of the bed. Almost immediately an improvement was perceptible. In two hours and a half his worst symptoms had disappeared; the next morning he was, apparently, quite well. The other case was less alarming, but equally displayed the influence of opium as an antidote to belladonna. Nor should the cases recorded by Mr. Seaton, of Leeds, be forgotten, of the ten persons poisoned by eating the ripe berries of the atropa belladonna, in which opium was given with such signal benefit."

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67. *Poisoning by the Endermic Use of Atropine.*—Dr. H. Ploss, of Leipsic, relates the following case. A man, aged 33, had an affection of the larynx, which Dr. Ploss regarded as being of a syphilitic nature. Another physician, however, being called in consultation, decided that the case was one of simple laryngitis, and ordered a blister to be applied round the neck, to be dressed on the following day with an ointment composed of 15 parts of sulphate of atro-

pine to 700 of lard. Dr. Ploss expressed his fears as to the effects of this; but his remonstrances were not attended to. Some minutes after the application of the ointment, the patient suddenly sprang from his seat, in a state of undescribable anguish; he ran about the room, crying out that he was suffocated, that everything appeared black before his eyes, and that he felt as if he were being strangled. He violently tore off the dressing; and threw himself on his couch, his eyes fixed and his face fiery red. Dysphagia and dyspnœa increased more and more; clonic convulsions of the limbs set in, resembling those of chorea; the breathing became very frequent; the pulse rose to 140 or 150; the patient could not utter a word. An attempt was made to bleed him; but this could not be done on account of the constant convulsive movements. It was equally impossible to introduce anything by the mouth or by the rectum. The breathing soon became interrupted, the pulse thready, and the patient died, scarcely two hours after the application of the ointment.—*Brit. Med. Journ.*, Jan. 21, 1865, from *Zeitschr. für Med. Chir. und Gebürtsh.*

68. *Lead Poisoning.*—Dr. ALEXANDER FLEMING, in a Clinical Lecture on Lead Poisoning and its Treatment (*British Med. Journ.*, Jan. 1865), relates the following case:—

"A very interesting example of unsuspected lead poisoning in a child six months old has been lately mentioned to me by my friend Dr. Jordan, of this place. This infant (T. O.), which was being brought up by hand, without any ostensible cause began to decline, and to present unequivocal symptoms of lead-poisoning; viz., severe colicky pains, constipation, gradually increasing emaciation, and unusual pallor; sickness, dilated pupil; finally, extreme drowsiness, and almost complete paralysis of the upper extremities. The lower limbs were also enfeebled, but in a less degree. There was no convulsion. After two months' suffering, and of mystery as to the origin of the evil, the feeding-bottle was accidentally examined, when the ball-valve and its case were found to be undergoing corrosion; and, as these were made of an alloy containing lead, the cause of the illness was at once apparent. This was removed, and the child made a rapid recovery. It is interesting to note, that in this infant, *which had no teeth*, there was no blue line on the gum."

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

On Sunstroke, as it occurred in the Army of the Potomac. By CH. SMART, M. D., Asst. Surg. U. S. A., Medical Inspector Second Army Corps.

As the spring of 1863 verged into summer, and rumours of the occurrence of cases of sunstroke pervaded the army, my conscience commenced to prick me on account of my ignorance of the condition so called. I knew nothing of it, had never seen a case, and had no written information concerning it; hence I had recourse to the medical officers in the command for instruction in its pathology and treatment. The result of my inquiries was very unsatisfactory. Some believed the state to be allied to syncope—to be syncope *and something more;* but as they could not definitely state in what this *plus* consisted, a link was wanting in the chain of indications to be fulfilled by treatment. Their dependence lay in removal to the shade, the horizontal position, cold to the head, and a swallow of whiskey. Others were inclined to favour an apoplectic pathology, alleging their belief that in every fatal case a clot would be found, if carefully searched for, in the cerebral textures. These placed the patient in an ambulance, with cold cloths to his head, administering at the same time a couple of cathartic pills; some advocated the use of the lancet, although I have never seen it had recourse to.

A short time ago I chanced to see a paper on this subject, by Dr. R. C. Stiles, Professor of Physiology in Vermont University,[1] formerly of the U. S. Volunteers, and surgeon-in-chief of the First Division, Second Corps, which I read with an interest deepened by the fact that I had had the satisfaction of seeing many of the cases he studied. In this paper he communicates the details of some of the experiments which led him to the conclusion that sunstroke is a *paralysis of the heart*, due to the direct action of heated blood upon its muscular tissue. I do not, however, agree with Dr. Stiles in his conclusions. I do not consider that any results derived from his experiments are admissible as explanatory of the "physiology" of the disease in question, how far soever they may go—and with that, at present, I have nothing to do—to prove that heat, at least heat as applied by him, induces a paralysis in muscular tissue. This opinion I base on the fact that the combination of conditions to the action of which he subjected the various animals experimented on differs materially from the circumstances which in nature conspire to the production of sunstroke; he immersed rats, mice, and kittens in water at 120° Fahr., and held them by the back of the neck so as to permit of respiration, until death supervened. In one case, however, he induced death with all the symptoms of sunstroke by immersing a rabbit in hot air (not over 120° Fahr.); this, although it does not prove *his* point, is interesting in so far as it defines precisely the essential elements in the causation of this disease, limiting them simply to exposure to a hot and dry atmosphere, and relieving the direct solar ray, its chemical and luminous constituents, and muscular exertion, from all charge save that of being accessory.

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[1] Boston Med. and Surg. Journal, June and July, 1864.

Some writers advocate as the true theory of this disease, a direct influence exercised by heat on the nervous system, which, by altering in some slight degree its chemical constitution, or perhaps only its molecular or physical arrangement, interferes with its normal action, and becomes propagated to the heart and lungs, in which disturbance of function is secondarily induced.

In the October number of this journal for 1863, Dr. H. C. Wood, of Philadelphia, gives a history of nine cases of sunstroke, of which only one recovered. In his remarks upon these, he throws overboard the suppositions that the disease is of inflammatory origin or dependent on nervous exhaustion, and maintains it to be due to a morbid condition of blood. He says: "The true pathology of the disease appears, then, to be as follows: The excessive heat causes a suspension of the functions of the excretory glands, and produces changes in the life-fluid probably more than the simple retention of effete material. These alterations in the blood are trifling at first, but are progressive, so that in a short time some agent or agencies are evolved capable of producing the fearful cerebral symptoms. The name of '*sunstroke*' is very indefinite, and if the pathology advocated in this paper is correct, *thermohœmia* or *thermic fever* would be more in accordance with the modern system of nomenclature." But what the nature of the changes may be, he does not discuss. He does not specify the agent or agencies developed in the blood, and hence leaves us in ignorance of the proper means to be adopted to counteract their influence.

Sunstroke (I refer only to what is known in the Army of the Potomac as such) was of very frequent occurrence during the summers of 1863 and 1864, so much so, indeed, that the profession ought, perhaps, to be more intimately acquainted with it than we are. We know it only as a passing acquaintance, by sight. This is mainly attributable to the fact that the affection seldom presents itself while we are lying in camp and can render it some attention, but, instead, forces itself under our observation upon the march, when we have only just time to halt and lodge the patient in an ambulance; or, worse still, while manœuvring in front of the enemy, when the wounded from the skirmish line have more urgent claims to our regard. I regret that I cannot place upon paper any reliable statistics concerning the frequency of the occurrence of sunstroke, nor indicate the temperature of those days most prolific of such cases, nor find a form in which to express the amount of fatigue undergone by the men before succumbing to the stroke. I can only say that during the summer of 1863, spent in marching from the Rappahannock to Gettysburg, and thence to the Rapidan, with an average strength present of about 12,000, fifty-two cases only were recorded; while during the following season, spent in fighting from the Rapidan to and in front of Petersburg, with a mean strength of about 20,000, the number of cases recorded by the regimental surgeons amounted to three hundred and ninety. In the latter year the campaign was more arduous, the season more sultry, and the latitude lower. Many cases transpired, however, that never came under observation at all; those recorded were the graver cases only. Concerning mortality, I have to state that I observed no case of death during the former summer; during the latter I saw seven cases prove fatal. I am not aware that any *post-mortem* examinations have been made in this corps in cases of death from sunstroke.

Symptoms.—The man who is to become the subject of a *coup de soleil*, most likely a raw Irish or German recruit, at first perspires very freely, as indeed do his veteran comrades, while toiling along under the weight of arms, knapsack, blanket, and rations. The back of his head feels painfully hot, notwithstanding he may have draped it with a silk handkerchief, reversed his cap or filled its crown with leaves, as an infallible protection against the scorching rays. His heart beats violently, and his mind is unpleasantly cognizant of its action. He breathes rapidly, open-mouthed, for there is a slight feeling of weight in his breast, which the hot air he inhales, rendered hotter still by the dense clouds of dust with which it is laden, does not seem to have body enough to uplift. Thirst torments him also, while a crowd of lesser evils contribute to the sum of his discomfort. His eyes smart from the influx of the streams of perspiration, which neither the eyebrows nor the greased margins of the eyelids suffice to turn aside; while the optic nervous masses and the brain as a whole ache with the glare of the sun's reflection. He is very miserable, so much so that his mind is filled with nothing but impressions of his own morbid sensations.

These symptoms grow rapidly more distressing. He halts for a moment, and, notwithstanding the remonstrances of his comrades, takes a long draught of the warm water his canteen contains. He feels the better for it and pushes on with renewed vigour, but by and by relapses into his former state.

Your old soldier, when in this condition, drops out of the column, throws his gun and knapsack on the ground, and stretches himself at full length in the shade of some tree where he lies alternately fanning himself and sipping his stock of water. By the time he has finished his canteen he is quite recovered, and as he has no desire to be challenged by the Division Provost Guard, he immediately buckles to the road, rejoining his command most likely at its next resting place. But your raw material does not attempt this, feeling as he does from home if separated from his regiment, and alone in the world when beyond the limits of his brigade. He staggers onwards, a vague feeling of some impending calamity oppressing his mind. His heart becomes lessened in power, it flutters rather than beats. The perspiration disappears from his skin, but his thirst increases; he makes frequent but futile efforts to spit away the viscid phlegm that sticks to his lips. The aching in his head becomes pain, the oppression in his chest agony. A tremor seizes his limbs, a feeling of sinking takes possession of his heart, and his mind swims into unconsciousness as he falls—sunstruck.

He is insensible. At first, perhaps, he may be able to articulate an indistinct answer to inquiries concerning his name or regiment if asked in a loud sharp tone, but this does not last long; he becomes totally unconscious in a very short time. The pupils may be dilated or contracted. His pulse is quick, compressible and small withal; it even intermits occasionally. His breathing is hurried, short shallow respirations, interrupted now and again by a long deep-drawn sigh. His skin is hot and dry, and his lips livid. He clutches nervously (and this is a measure as well of his insensibility as of his præcordial distress) at his chest with a force oftentimes sufficient, if the surface be exposed, to lacerate the skin. If no one be present to have recourse, either knowingly or unwittingly, to the means calculated to obviate the abnormal condition and promote a speedy return to consciousness and ease, the man will assuredly die, unless, indeed, nature should interfere, as she sometimes does, and by the bursting of a thunderstorm effect a cure. The power of deglutition becomes lost as his insensibility deepens. His pulse flickers faintly, until, with a sigh, broken perhaps by the death-rattle in his throat, he expires.

But very frequently to these symptoms is superadded one which gives the disease to the onlooker a very fearful aspect. I refer to the occurrence of tetanic convulsions. The intermissions last for two or three minutes or longer, the paroxysms from ten to thirty seconds. As the fit comes on the breathing becomes more rapid and shallow, the limbs writhe and the nervous twitchings of the fingers, as they tear at the præcordia, are very marked. Violent contractions of the muscles speedily ensue, stretching the body out perfectly straight, or, more commonly, with the head thrown back and the abdomen raised from the more powerful action of the extensor muscles. This condition continues but a few seconds in all its intensity; the spasm then relaxes and seems about to disappear, when, after one or two hesitating twitches, the muscles again start into rigid prominence. This may be repeated several times before the fit comes to a conclusion. While the body is thus bent in rigid spasm the breathing is suspended and the lividity of the lips increases. The termination of the fit is marked by a long sighing expiration, which is less noticeable the nearer the case approaches its fatal end. Death, when it does occur in these cases, usually takes place during the continuance of a convulsive seizure.

Pathology.—Heat relaxes warm-blooded animals. Blood is accumulated in their superficial vessels, and from them its water is rapidly but insensibly vapourized, or gathers in big dew-drops upon the skin. Now water is of as much importance in the constitution of the blood as are the red corpuscles themselves, for although the immediate purpose it fulfils in the economy is simply a mechanical one, yet, to the proper conduction of the chemico-vital processes in which the disks are concerned, *its* presence in normal quantity is indispensable. Deprive a man of half the water his blood contains and the consequences will be as apparent as if in the loss the blood-cells had been implicated also; the difference exists only in the facility with which in the one case the loss can be repaired. The alteration in the physical properties of the blood consequent upon this evaporation of its water, and concomitant changes in the bloodvessels themselves tend to produce retardation of the flow and depression of the vital powers.

The viscosity of the now concentrated serum, the aggregative tendencies of the closely-crowded corpuscles, and the relaxation or loss of tone (Dr. Stiles would call it incipient paralysis from heat) of the vessels, all combine to prevent the circulation of life's current with a rapidity adequate to the preservation of the functions at a healthy standard. But another and more potent influence productive of evil arises from the effects on the circulation of the alteration in the blood-cells, which the mutual action transpiring between themselves and the unnaturally dense medium in which they float, produces. Exosmosis drains the disks of their contents, corrugates them, and renders them incompetent to discharge, with an efficiency necessary and natural, the important duties assigned them in the system. In consequence of this the blood flows slowly and more slowly through the pulmonary capillaries, in which it finds difficulty in becoming disburthened of the poison it has gathered up while traversing the systemic circle. Congestion soon ensues, and in addition to the morbid conditions already enumerated as affecting the blood, we find it becoming more and more deteriorated by non-aeration.

The effects of this alteration in the bulk, rapidity of circulation, and constitution of the vital fluid are first manifested upon the brain, being evidenced by the signs of depressed nervous energy we observe—the aching and incapacity for mental exertion which we observe in the first instance, and the giddiness and insensibility which so soon supervene. The staggering gait and tremors are manifestly results of the impaired nutrition and deficient innervation of the muscular system; while the convulsions, which in many cases are so frequent, may be referred to the removal of the restraining influence exerted by the brain over the reflex function of the medulla spinalis. The condition of the pulmonary vessels and of the blood contained in them, as perhaps also, sympathetically, the unoxygenated state of the tissues traversed by the systemic supply tubes, furnish an explanation of the præcordial oppression which is always so mutely but distressingly complained of. Spasm of the diaphragm, during a convulsive paroxysm, may perhaps increase its intensity. The heart, influenced by the same causes—the state of the nervous system, and the slow transmission of an altered blood through its proper vessels—loses power, but, by increased frequency of action, it endeavours to overcome the obstacles to free circulation and to supply its own and the system's necessities.

If this be the true light in which to view the pathology of sunstroke, it defines the disease as a condition resulting from the concentration of the serum of the blood.

Bodily exercise produces heat. Bodily exercise, also, when carried to excess, in a dry atmosphere, and when at the same time the individual is deprived of water, produces symptoms of depression similar to those above mentioned, and dependent upon the same cause, for heat, whether derived from some source foreign to the body or generated within the system, gives origin to evaporation from the cutaneous or pulmonary tracts, concentration of the serum, and if this could be carried to the requisite extent, would lead to a *coup de soleil.* When physical exertion, then, is added to exposure to external heat, the morbid condition becomes more speedily developed, since both causes combine to produce but one effect. The exercise, however, is by no means to be considered as an essential, if Dr. Stiles' experiment be allowed any weight; and, besides, I can instance cases where it, from the insignificance of its amount, could have exerted but a small share of influence in bringing about the disease. I have seen officers struck while riding at a gentle walk in the marching column. Two cases of death occurred in the command during one sultry day in the beginning of July of last year; in the one case, the man, a convalescent from some northern hospital, had walked from City Point to Petersburg before he was struck; in the other, without any previous exertion on the part of the soldier, the stroke occurred while he lay oppressed with heat under the shade of his shelter-tent.

It is interesting to remark that the depression which is induced exerts a conservative influence over the system, diminishing as it does, in some measure, the activity of the cause, which by its continued action leads to insensibility and death. Farther physical and mental exertion is rendered impossible; the rapidity with which the chemical changes which take place in the systemic capillaries are accomplished is materially lessened, and the evolution of heat by the system (and hence evaporation) is correspondingly diminished. Nature, as it were, feels the losses already entailed upon the water of the blood, and tries to reduce to a minimum the further calls to be made upon it, by lessening the amount of heat generated within the body.

Treatment.—If what I have written above embodies a view in the main correct of the pathology of sunstroke, it is needless for me to occupy time in enlarging upon its rational treatment. The indications to be fulfilled in order to prevent the occurrence of the stroke if it be but threatened, or to treat it if it has already occurred, are in the one case to preserve the blood in, and in the other to restore it to, its natural condition; and the means in both cases is the same—*water*.

I have often wondered how it came to pass that the medical officers of the Army of the Potomac should caution their men to avoid drinking much water on a hot day's march. From an idea that dangerous symptoms have been known to have been a consequence of the practice, and knowing that a sharp bellyache is a frequent result, they instruct their men to be chary of drinking—to stint themselves rather than become victims to the effects of over indulgence. So firmly have these teachings settled on the minds of the men, harmonizing as they do with the vague impressions on the subject they brought with them into the army, and very likely with their own experience on the march, that they have fallen into the opposite extreme. Every soldier believes that the more he thirsts, the less he ought to drink, for the greater is the danger in drinking. Thirst is an indication of a want in the system—an uneasy feeling with which nature harasses us when we stand in need of water, lest unwittingly we might do ourselves an injury, not knowing when to drink. It is a beacon lighting us to the well, and not, as regarded by most of our troops, an infallible danger-signal, warning them from its brink.

Troops upon the march should not be sparing of water, if it is to be had. They ought to drink freely; but yet they should not—as they are very apt to do when they can withstand their thirst no longer—empty their canteen before taking it from their parched lips. How great soever the want of water in the blood may be, thrown thus into the stomach it does harm. The loss which the blood suffers is gradually effected, and in like manner absorption to repair that loss requires time for its accomplishment. Water cannot find its way as rapidly from the stomach to the veins as from the canteen to the stomach; so that when this organ is thus distended it must necessarily remain so for some time, giving rise to very distressing symptoms from, if the water be cold, the sudden chilling of its tissues—from the distension of its walls, from the weight, and consequent straining of all the structures suspending and retaining it in its position, and from the sympathetically affected nervous system. The sharp, dragging pain at the epigastrium, the faintness, tendency to vomiting and severe prostration—which by the way often lead the careless to look upon the case as one of sunstroke—are the manifestations of these conditions. Water, then, should not be thus recklessly poured down. On the contrary, it should be swallowed in, I will not say small doses, but in doses not too large, and these should be so frequently repeated as to enable the blood to maintain its normal density, notwithstanding the drain upon it set up by nature with the view of regulating the temperature.

During the course of my service with this corps, I have viewed all the cases of sunstroke I have met, with a few exceptions at the commencement of my experience of the disease, as originating and progressing in the manner I have indicated, and have treated them in accordance with that view. Certainly, if the effects of treatment are admissible as evidence either for or against the correctness of a theory of disease, the result in my experience of replenishing the vessels with water would afford powerful testimony in favour of the supposition that the symptoms are dependent upon nothing but the lack of water in the system. Pursuing this plan of treatment, I have been uniformly successful. I have lost no patients yet; death occurred in the cases which at the commencement of this article I mentioned as having been fatal, either immediately before or immediately after I reached the spot where they lay. So confident, indeed, did success latterly make me, that in every case I felt justified in prognosing that if the patient lived but a few minutes, that is, time sufficient to admit of the absorption of a material amount of water by the veins, he would ultimately recover. I came to feel no discouragement even in the presence of the most formidable looking case, satisfied that I possessed the wherewith to conquer, provided time was afforded me to make use of it.

On finding a soldier sunstruck by the roadside, my first care has been to determine the amount of insensibility, by asking him in a sharp tone the number of his regiment. If he attempted to articulate or showed in any manner that my question had made an impression on his mind, I immediately placed the canteen to his lips and permitted him to swallow four or five ounces of water, repeating the quantity after two or three minutes, having in the interval had him transported to the nearest shade. If, however, his insensibility happened to be more perfect, I proceeded with more caution, placing only a few drops in his mouth to learn the extent of the interference with the power of deglutition.

The first case of a serious nature that I was called upon to treat showed, I think, very markedly the effects of the water cure. From the fact of its being my first case of such a character, all its details have lived in my memory with a clearness and depth of tracing far greater than have the particulars of individual cases occurring subsequently. It was one of the many that happened on the forenoon of Sept. 12th, 1863, when the Corps was marching from Morrisville to Rappahannock Station, Va. I was riding forward to overtake my command, from which I had been separated for an hour or two by some duty, and when I was about half a mile from the tail of the column I found a man in the sun by the roadside, in convulsions, with a small circle of men belonging to the provost guard around him. He was comatose; his skin was very hot and dry; his lips livid; his left pupil dilated somewhat, and his pulse, from its smallness, softness, and rapidity could not be counted. The convulsions were frequent and so violent that I expected each succeeding paroxysm would terminate life. He had been in this condition for about ten minutes; the fits, according to the statements of the men around, having during that time been steadily increasing in frequency, intensity, and duration. A medical officer had seen him immediately after he had been struck down. He could not be said to have treated him, having simply attempted to pour whiskey into his stomach, failing in which he had galloped off to order an ambulance to the spot, leaving instructions that cold cloths should be kept to the patient's head. A man had gone in search of water, but had not returned.

I had the patient carried to a house situated about a hundred yards from the road. I laid him down in its shade, and having obtained water placed a few drops in his mouth, but no attempt was made to swallow, and some trickling into the larynx, a convulsion more severe than any hitherto affecting him was induced. Thereupon I matted his hair with water, and poured it freely over his body, thoroughly saturating the woollen shirt he wore. By this several beneficial results were effected. The overheated body was cooled by the direct contact of the water, and by the evaporation set up from the surface. All farther loss from the serum of the blood was prevented, and an opposite process, that of absorption by the venous radicles, was instituted. I could do nothing more but await the issue with patience. I conceived that if I had had facilities for *immersing my patient in a tepid bath* his chance of recovery would have been immensely increased.

Presently I thought that his spasms recurred less frequently and diminished in intensity; his pulse certainly altered for the better, and his breathing seemed to improve, notwithstanding that his hand tore at his chest with greater violence. As I continued sprinkling water over him a few drops fell upon his lips; his tongue instantly protruded itself and gathered them up. I dropped some more intentionally upon them with a like result. He was improving. At the end of the next paroxysm, which was a slight one, I raised his head and he drank greedily, uplifting his eyelids as I placed him back upon his pillow, but no gleam of intelligence was yet apparent in his look. In ten minutes more, having drank several times during that period, and objected by a motion of his head when I held a cup containing whiskey to his lips, he was recovered. Very much exhausted he was, it is true, but his pulse and breathing were regular, and his sensibility and consciousness had returned, and although occasionally his fingers would twitch as they had previously done when a convulsion was about to seize him, such movements were not now followed by the general spasm. To prevent any evil effects that might arise from the continued application of the water to his body, I directed his wet underclothing to be removed, the surface rubbed dry, and a clean shirt which his knapsack furnished to be put upon him. His canteen was then filled with water and his blanket wrapped around him before he was transferred to the ambulance.

Here I cannot refrain from quoting the concluding paragraph of Dr. Wood's article: "The treatment of the fully developed disease has been in our hands utterly futile. The case that did recover would have done so if nature had been left to herself; in all the others the condition of the blood, when brought in, precluded all hope. I know of no agents that will check directly the tendency to degradation of the life-fluid. The regular treatment in this hospital is to give a turpentine injection and administer stimulants; both of which are in most cases of no avail. The indications are, first, to check the changes in the blood, and secondly, support the system. But unless the first can be fulfilled, the second is useless. Dr. Taylor (*loc. cit.*) states, that he did not lose a case during April, 1852, when many were stricken down with well-marked symptoms, and when he practised cold affusions, water being poured on them continuously until they showed signs of returning consciousness. This result is so wonderful as to make one doubt whether there is not some difference in the disease as seen in the East Indies and in this country. But the plan certainly ought to be tried, as it may possibly check chemical change by reducing the temperature, and at the worst can only be equally hopeless with all the others."

Sequelæ.—Sometimes, as in such serious cases where the patient has been for a long period insensible, tetanic or epileptiform convulsions, more or less severe, will persist in attacking him now and again, for many hours after his return to sensibility. This, I consider, is dependent upon the disturbance of the nervous function caused by the changes that have taken place in the brain, from non-nutrition and non-removal of effete or used-up particles of its tissue, during the comparatively long period it has suffered from the impaired flow and altered constitution of the blood. To treat these, of which I have seen but two well-marked cases, I have given whiskey and large doses of morphia, the former to supply the lack of the *vis nervosa,* and by increasing the rapidity of the circulation, to promote a renovation of the cerebral substance, until the latter, the morphia, shall have induced a sleep which effects that renovation more effectually.

While referring to the sequelæ of coup de soleil, I may mention a case which occurred on the 15th of June, 1863, in the person of a corporal of the 63d N. Y. Vols. The man had been drinking very freely for two or three days previous to the attack, as the regiment had received pay, and sutlers in those days did a thriving business in liquor under the rose. For some time after his insensibility and convulsions were removed he lay exhausted and speechless, but as his recovery progressed a new symptom or sets of symptoms developed themselves. He presented the appearance of one labouring under delirium tremens. When I visited him, he talked to me very volubly concerning some rebel sharpshooters that were endeavouring to pick him off, mentioning that one of them had already lodged a ball in his brain, which, he casually remarked, he would report to-morrow at sick call to have me cut out. He eyed me askance and suspiciously during all his talk, and moved off a step or two in alarm when I proffered immediate surgical assistance.

Excessive mental action, whether caused by protracted anxiety, continued voluntary labour of the mind, or the use in large quantity of spirituous liquors, is followed by a depression of the energies, but the blood question, as considered above with reference to sunstroke, does not enter into the pathology of the state. Here, we have the depression of the nervous powers a consequence of previous excitation, not of impeded circulation. The difference in the cause explains what of difference there may be in the manifestation. In the one case we have the supply of blood gradually cut off from a previously healthy brain and insensibility as a consequence; in the other we have a mind exhausted from previous overaction, but with a comparatively normal supply of blood, which enables it to act as perfectly as its own condition will permit. There is no insensibility, but there *is* some alteration from the normal manifestation of mind, usually what we understand by nervous irritability. If now these two conditions should coexist, impeded flow, etc., and irritability from some primary excitement, as when an individual suffering from delirium tremens is exposed to a dry hot atmosphere during perhaps more or less of bodily exercise, we shall have produced a condition of system of a much more serious nature than that arising from either of the causes singly. The symptoms we would expect to meet in such a case are just such as I observed in the case referred to above; an insensibility more or less profound, since the loss of consciousness caused by a deficiency of healthy blood prevents the exhibition of the irritability of delirium, and a more or less complete loss of speech necessarily marking its loquacity, for independent of the interference with the working of the organ of voice, the elementary faculties of sensation and conception of ideas which in delirium are exalted here become lost. But this insensibility speedily running off after the replenishment of the vessels, the brain, which has not yet recovered from its depression, but instead has perhaps sunk lower into that state from the temporary interference with its nutrition, is permitted to act in the irregular manner characteristic of the condition. Treated with whiskey and morphia he ultimately slept, and awoke, after a few hours, with a sound mind in a sound body.

Near Petersburg, Va., March 15, 1865.

Compound Comminuted Fracture of the Left Temporal Region of the Skull, with loss of bone, and about six drachms of brain, resulting from the kick of a horse, followed by complete recovery. By Benj. L. Bird, Jr., M.D.

On the morning of November 3, 1864, I was called to see a negro girl, aged eight years, who had been kicked by a horse on the head while playing in the yard the evening before. Upon inquiry I learned from an intelligent lady, who saw the child a moment after the accident, that she appeared a little stunned, and ran in a zigzag course, but did not become entirely insensible; hemorrhage from the wound slight; slept pretty well during the night, vomiting, however, occasionally. Upon removing the bandage, a large quantity of brain was found upon it, and some was still exuding from the wound of about the consistency of thick cream. The scalp being very much contused and swollen, I could not explore the wound, nor did I think it necessary, as the injured brain could escape externally, and the child was perfectly sensible. I dressed the wound with lint and the bandage, and kept the parts wet with lead water and tincture of opium. There was incessant vomiting from the first, which ceased after a time under the use of mustard to the epigastrium and spine and lime-water and milk internally. There was headache and the bowels were constipated, for which cold cloths were applied to the head and a mercurial cathartic as soon as admissible. There was more or less constitutional irritation for several days after the accident. The antiphlogistic regimen was strictly enforced, and febrifuge mixtures administered whenever there was fever.

On the second day, Nov. 4th, I found the child still sensible and doing remarkably well, some fever but less vomiting and headache, stomach more retentive. The swelling about the wound having somewhat subsided, I could now explore the fractured bones. Upon introducing the finger under the scalp, I discovered that a piece of bone had been staved out by the kick, making a fissured opening large enough for the easy introduction of two fingers along the fissure, through which the ruptured brain had escaped. Other portions of bone could be felt by passing the finger under the scalp to be fractured and a little depressed; the serrated edges of the bones in position could be felt above the depressed portions for the extent of half the temporal fossa. The hole in the skull made by the loss of bone was just above the temporal ridge in the coronal suture. The membranes were of course ruptured, and as the injured brain escaped through them, the opening enlarged, so that a partial hernia of the brain took place whenever the wound was dressed, subject to being further minced by the sharp edges of bone through which it protruded. I now brought the edges of the wound together, as far as the contused and swollen parts would permit, by means of adhesive strips, and dressed it with cerate, a compress of lint and the bandage, which, while it afforded sufficient support to the brain, allowed the ready escape of nature's debris. I continued to dress it in this way every other day for ten days, closing the wound a little each time. As the discharge had now greatly decreased, and the scalp wound extending down upon the cheek began to heal, I dressed it once in five days, using cerate, lint, and a pasteboard splint moulded to the shape of that portion of the skull. At each subsequent visit the wound was found to be progressing favourably; there was, however, an ichorous discharge which excoriated the parts around. I was apprehensive that a portion of denuded bone or some of the sharp edges so perceptible to the touch might die or scale off—thus keeping the wound open for a longer time, but happily all the pieces of bone were sufficiently nourished to maintain their vitality. I would have removed these sharp edges, which were irritating the brain and its membranes, and the operation seemed to be clearly called for, but the administration of ether would have been hazardous, and whenever the child screamed the brain would forcibly protrude through the opening in the skull, so I concluded to leave the operation to nature, who performed it by the process of absorption far better, and with greater safety to the patient. On Dec. 20th, forty-seven days from the day of the accident, the wound had entirely healed, and up to this time, Feb. 2, the head is perfectly secure and the pasteboard cap has been discontinued.

Strange to say, no inflammation of the brain or its membranes took place during the whole course of the treatment, nor were there any symptoms of compression from the first; these circumstances, connected with the eventual cure, I attribute to the escape of a button of bone at the time of the accident, allowing the egress of effusions which otherwise must have accumulated upon the brain, causing compression—hence the importance of trephining in cases of comminuted fracture before the symptoms of compression arise.

Cases of Gunshot Wounds of the Head. By W. B. Trull, M.D., Ass. Surgeon U. S. Vols.

Case I. Anthony Proud, aged 16, private in Co. C., 128th Indiana Infantry, was wounded in the battle of Franklin, Tenn., Nov. 30, 1864. Admitted into hospital Dec. 1st. Patient was able to give a description of the injury, which was corroborated by an examination of the fractured bone. A conical musket-ball had struck the skull near the right parietal eminence, driving fragments of bone deep into the brain, the ball escaping except a small section which, splitting upon the edge of the bony surface, penetrated both lobes of the cerebrum. Water dressings were applied to wound. The patient conversed intelligently, showing no disturbance of the intellectual powers; he presented no unfavourable symptoms, neither of paralysis nor pain, except a slight headache, for thirty-six hours after admission. He began now to manifest a marked indifference to surrounding objects, concealing his head in the bed-clothes, refusing the attentions of the nurses, until he sank into a comatose condition, and died Dec. 2.

A *post-mortem* examination, eighteen hours after death, showed firm coagula between the dura and pia mater, spicula of bone and the track of the lead, which was found lodged in the left lobe of the cerebrum near the "island of Reil;" the track extended just above the corpus callosum. A considerable quantity of cerebral substance had been displaced.

Case II. John Caley, aged 51, native of Virginia, Sergt. Co. A, 11th Tenn. Infantry, was wounded in a melee at Sherman Barracks, near Nashville, Tenn., Oct. 27th, 1864.

A pistol-ball struck the skull near the left parietal eminence, driving a large fragment of bone deep into the brain, and burying itself in a post in the vicinity. The bone was removed soon after admission into ward, and a probe could be readily introduced as far as the lateral ventricle. Paralysis of the auditory nerve and brachial plexus of right side was instantaneous.

Patient lay with head inclining far to the left, refusing to change his position. Secretions continued to be normal and regular, pulse soft and slow, and intellect unimpaired. There was no expression of pain until ninth day after admission, when gangrene of the cerebrum was detected.

The sloughs were removed by the knife and detergent dressings substituted, but patient became rapidly comatose and died Nov. 7th.

A *post-mortem* examination made eighteen hours after death showed firm coagula between dura and pia mater and a considerable quantity of sphacelated cerebral substance. It also appeared that the lateral ventricle had been opened though but slightly implicated, its cavity containing a normal amount of serous fluid and its walls uninjured. The choroid plexus was somewhat congested.

It will be observed that though the above cases presented symptoms common to penetrating wounds of the head there was a remarkable difference in effect. In both about the same quantity of cerebral substance was lost; *in one*, displaced by the penetrating fragments of bone and lead, *in the other*, by the destructive action of gangrene. *In one*, there was immediate and perfect paralysis of the "portio mollis" and of the brachial plexus; *in the other*, no disturbance of nerve power. The opening of the lateral ventricle was the only apparent cause for the aggravated symptoms presented in the case of Caley.

CUMBERLAND U. S. A. GENERAL HOSPITAL, NASHVILLE, Jan. 12, 1865.

Traumatic Tetanus. Successfully treated in the Jarvis U. S. A. General Hospital, Baltimore, Md. By CHARLES H. JONES, M.D., Acting Assistant Surgeon U. S. A.

Corporal Alonzo McNeal, aged 20, Co. A, 121st New York Vols., wounded 19th of October, 1864, at Cedar Creek, walked immediately from the field to his Division Hospital, from thence he was conveyed in a baggage wagon to Martinsburg, Va.

Admitted in this hospital 24th October, five days after the injury, suffering from a gunshot wound of the posterior aspect of right heel about the insertion of the tendon Achillis, exit about one inch and a half below external malleolus external to the joint, wounding in its course the external saphenous nerve.

His condition did not attract any special attention until the 29th of October, ten days after receiving the wound, when he manifested symptoms of approaching tetanus, such as stiffness and pain in the jaw, with some difficulty of opening his mouth widely. This condition continued until 1st November, when his features became fixed, contraction of the jaws complete, deglutition painful and difficult, which was soon followed by spasms of the voluntary muscles, with opisthotonos pain at the epigastrium; the abdominal muscles, including the diaphragm, extremely tense and unyielding. Trismus well marked, rendering it necessary to keep constantly in his mouth a "wooden bit" to prevent him from biting his tongue, breathing embarrassed, perspiration at times profuse. His intellectual faculties were undisturbed, pulse round, and all the functions, except those of digestion, seemed to act properly. This was his condition, with slight remission, until about the 1st of December; from this time his improvement was progressive.

Treatment.—Considering the primary morbid action to be vascular rather than nervous, and that the energies of the brain are less under the influence of the disease than those of the spinal cord, the treatment was suggestive of "spinal meningitis," he was ordered a purgative composed of calomel ℈j, pulv. podophyllin gr. ij, which was followed in four hours with magnes. sulph. ℥j. The following day he was ordered eight cups on the upper portion of the spine, and given once in four hours ext. conii gr. ij, suspended in water with 15 drops of chloroform, with milk punch and beef essence *ad libitum*. In addition to this treatment, a large blister was applied down the spine, and afterwards sprinkled with $\frac{1}{2}$ gr. sulph. morphia twice a day. This constituted the treatment, with the occasional use at bedtime of ℈j pulv. Doveri, his bowels being kept free with the purgative as his condition required. This treatment was continued until December 8th, when all spasmodic action had ceased, leaving him with hardness of the external abdominal muscles and a partial loss of "peristaltic action," which was relieved in a few days by the use of strychnia $\frac{1}{16}$ gr. three times a day dissolved in water by dilute acetic acid.

Jan. 17.—He had entirely recovered, and received a furlough to visit his home, Sing Sing, N. Y.

Phosphorus Necrosis. By Wm. Hunt, M. D., one of the Surgeons to the Pennsylvania Hospital.

In the original department of this No., p. 353, I related a case of excision of the lower jaw effected with phosphorus necrosis, accomplished without any external incision. Since that account was printed off, I have obtained additional evidence of the practicability of operating by the method there advised.

On the 13th of March, 1865, I assisted Dr. C. S. Boker, at St. Joseph's Hospital, to remove the whole lower jaw for phosphorus necrosis, from a girl of 19 years of age, who was a packer in a match manufactory.

The disease came on after having a tooth extracted and returning too soon to work. This case was particularly interesting, as illustrating the feasibility of the operation without external incision, even where the attachments maintain their original firmness. The right side after division at the symphysis was removed as in Courtenay's case. The left side was found to be diseased so near up to the condyle as to call for the removal of the whole piece, but the attachments of the muscles, etc., were as firm as natural. Nevertheless, by putting them on the stretch by grasping the bone with the forceps, and by a judicious application of the cutting end of the elevator or lever, and also of the scalpel, all the parts were separated and the bone was removed entire. On both sides the coronoid and condyloid processes remained unbroken. There was no hemorrhage, and the patient was easily kept under the influence of ether and chloroform. She sat up the day after the operation, and her condition, even then, was much more comfortable than before it.

Recantation. Note to the Editor from W. F. Atlee, M. D.

Dear Sir: In the Bibliographical notice of the *Lectures on Venereal Diseases*, by William A. Hammond, M. D., published in the last number of this Journal (January, 1865, pp. 207), I wrote as follows:—

"As regards Dr. Hammond's understanding of the doctrines of Ricord, it is necessary to call attention to several statements in these lectures. At page 119 Dr. H. says that certain experiments performed in France and Germany were the means of converting Ricord from the doctrine of the non-inoculability of secondary accidents. We have never understood that Ricord had been made to believe that secondary symptoms were ever *inoculable;* under certain circumstances—as, for instance, from a wet-nurse to a child—he teaches that they may be *transmitted.* At page 73, after stating that a soft chancre, when far advanced in the process of healing, is no longer capable of being propagated, Dr. Hammond adds that this view is contrary to that held by Ricord and his followers, who contend that a non-indurated chancre retains its virulent character to the last. On the contrary, Ricord himself says that during the period of reparation the pus becomes laudable, 'as it may justly here be styled, for it ceases to be inoculable.' (*Lettres sur la Syphilis*, page 160); and again at page 269 of the same *Lettres*, he says that chancre at the period of reparation can no longer, *as I have already demonstrated and taught for twenty years, furnish inoculable pus.*"

Since writing this I have learned that Ricord has changed his views in regard to the pus furnished by a healing soft chancre. In the *second* edition of his *Leçons sur la chancre*, at page 35, he says, "à la period *ultime* alors qu'à l'aspect de l'ulceration vous jùgeriey le chancre éteint le virus peut persister encore assez actif dans quelques points pour se transmettre et se reproduire. La spécificité persiste souvent au centre alors que le travail de réparation envahit déjà les bords de l'ulcère; le chancre vit encore à coté de la cicatrice qui tend à le recouvrer et *ce n'est que dans le dernier instant* de son existence qu'il perd enfin toute faculté virulente."

I was mistaken therefore in supposing a misunderstanding of the views of Ricord on the part of Dr. Hammond, in respect to the capability of a healing soft chancre propagating itself. As relates to the inoculability of secondary accidents, I have never read anything from Ricord himself to show that he has changed his long-maintained views of their non-inoculability. That he has changed, however, is the opinion, not only of Dr. Hammond, but of Bumstead, Lee, and other well-read students.

With great respect, I am, your obedient servant,

WALTER F. ATLEE.

DOMESTIC SUMMARY.

Transformation of Muscular Fibre into Fat.—Dr. J. WYMAN stated at the meeting of the Boston Society for Medical Improvement, that he had seen fatty degeneration occur in muscular fibre under the following circumstances. Portions of muscle were introduced into a flask with water, thoroughly boiled, supplied with air through a tube heated to redness, and then the flask was hermetically sealed. In the course of three or four weeks, on examination with the microscope, the fibres, without having become putrid, were found to have the sarcolemma entire; in some the fibrillæ were still distinct, in others they were partially replaced by granules, and in others they had wholly disappeared and the fibre-sheath was filled with globules of oil.

Dr. Ellis had examined some of the specimens, and recognized the same appearances which are seen in ordinary cases of fatty degeneration. Rudolph Wagner found that various albuminoid substances underwent a similar change when introduced into the abdominal cavity of a living animal. It was objected to his experiments that the fat may have been secreted by the animal and substituted for the materials of the tissues introduced, these having disappeared. In the experiments here given, such an explanation is inapplicable, for, since the muscular fibre was only surrounded by water, there could be no other source for the fat than the fibre itself.

In view of these facts it seems probable, as Fourcroy originally suspected, that adipocire can be derived from muscle which has undergone transformation into fat.—*Boston Med. and Surg. Journ.*, Feb. 2, 1865.

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GRADUATES OF JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA,
March, 1865.

At a Public Commencement, held on the 10th of March, 1865, the degree of Doctor of Medicine was conferred on the following gentlemen by the Hon. Edward King, LL. D., President of the Institution; after which a Valedictory Address to the Graduates was delivered by Prof. Pancoast.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Alexander, Robert M.	Kentucky.	Typhoid Fever.
Armstrong, John Maclay	Illinois.	Milk Sickness.
Bacon, James	Maryland.	Researches on Death.
Bailey, John S.	Kentucky.	Febris Intermittens.
Bair, John B.	Pennsylvania.	Diphtheria.
Barbour, William	Pennsylvania.	Gunshot Wounds.
Barnes, Henry R.	Pennsylvania.	Chloroform.
Barr, Abraham M.	Pennsylvania.	Puerperal Convulsions.
Beidelman, Abraham C.	Pennsylvania.	Primary Syphilis.
Bigler, William B.	Pennsylvania.	Specific Remedies.
Bishop, Jacques A.	West Virginia.	Hydrastis Canadensis.
Blount, Cyrus N.	Indiana.	The Ovaries.
Book, James Burgess	Canada West.	Pertussis.
Book, William P.	Pennsylvania.	Military Hygiene.
Bowman, John F.	Pennsylvania.	Tinctura Ferri Chloridi.
Bradley, James	Pennsylvania.	Rheumatism.
Bradley, William H.	Pennsylvania.	Measles.
Budlong, William Hague	Rhode Island.	Pulmonary Congestion.
Bullock, William T.	Rhode Island.	Circulation.
Burchfield, John P.	Pennsylvania.	Gunshot Wounds.
Burgner, Samuel H.	Ohio.	Asthenopia.
Carson, Thomas	Pennsylvania.	Enteric Fever.
Craig, Alexander	Pennsylvania.	Hysteria.
Davis, Benjamin F.	Missouri.	Menstruation.
De Kalb, Benjamin Drew	Virginia.	Oil of Turpentine as a Remedy.
De Witt, Calvin	Pennsylvania.	Opium.
Deal, Lemuel J.	New York.	Cinchona.
Dellenbaugh, Christ'n W.	Ohio.	Intermittent Fever.
Diller, Martin H.	Pennsylvania.	Primary Syphilis.
Downey, Joseph B.	Pennsylvania.	Gunshot Wounds.
Duerson, Charles	Kentucky.	Hysteria.
Dunkel, Thomas A.	Pennsylvania.	Labor.
Dunmire, George B.	Pennsylvania.	Gunshot Wounds.
Evans, George W.	Kentucky.	Digestion.
Finkbiner, S. Sylvanus	Pennsylvania.	Puerperal Convulsions.
Forster, O. Douglass	Pennsylvania.	Arterial Hemorrhage.
French, Charles H.	Ohio.	Chronic Dysentery.
Frick, Thomas	Illinois.	Puerperal Convulsions.
Glanden, Andrew P.	New Jersey.	Rupture of the Uterus.
Gosling, William Eugene	Tennessee.	Hysteria.
Grady, Robert R.	Kentucky.	The Sleeping State.
Greene, Willard H.	Rhode Island.	Inflammation.
Grindly, Thomas R.	Kentucky.	Primary Syphilis.
Groves, John W.	Kentucky.	Opium.
Gulick, Henry	Pennsylvania.	The Wonderful Human Organism.
Gwynn, William	Pennsylvania.	Hospital Gangrene.
Hall, George Henry	Maryland.	Phthisis Pulmonalis.
Haller, Francis B. (M. D.)	Illinois.	Milk Sickness.
Harralson, Benjamin F.	Kentucky.	Milk Sickness.
Hatfield, Nathan	Pennsylvania.	Pneumonia.
Herbein, Isaac S.	Pennsylvania.	Scarlet Fever.
Higgins, Richard M.	Missouri.	Inguinal Hernia.
Hill, Robert T.	Tennessee.	Dysentery.
Hoadley, Robert	Ohio.	Syphilis.
Hood, Joseph Turner	Kentucky.	Sanguinaria.
Hood, Richard French	Kentucky.	Yellow Fever.
Hoover, Nicholas M.	Pennsylvania.	Disease.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Huber, Samuel Senseny	Pennsylvania.	Amputation.
Hunt, Sylvester H.	New Jersey.	Leucocythæmia.
Judson, Adoniram B.	U. S. Navy.	Inflammation of the Brain.
Karsner, Daniel	Pennsylvania.	Variola.
Keith, Ezekiel (M. D.)	Iowa.	The Reparative Power.
Kirk, Richmond M.	Pennsylvania.	The Medical Student.
Koch, John G.	Pennsylvania.	Cynanche Trachealis or Croup.
Laforce, Howard C.	Indiana.	Scarlatina.
Landis, Isaac R.	Pennsylvania.	Carcinoma Uteri.
Litch, Wilbur F.	Pennsylvania.	Typhoid Fever.
Lovell, Albert G.	Pennsylvania.	Pyæmia.
Lupfer, Samuel P.	Pennsylvania.	Necessity of Correct Diagnosis.
Mavity, Wm. K. (M. D.)	Indiana.	Subnitrate of Bismuth in Chronic Diarrhœa.
McClean, William J.	Pennsylvania.	Tonsillitis.
McComb, James	Missouri.	Spotted Fever.
McLanahan, Johnston	Pennsylvania.	Diphtheria.
Mears, James Ewing	Missouri.	The Physiology of Repair.
Melick, Daniel Ramsey	Pennsylvania.	Treatment of Inflammation.
Metcalfe, Thomas Norris	Kentucky.	Syphilis.
Miller, John A.	Pennsylvania.	Physical Diagnosis of Pulmonary Affections.
Moore, Samuel Grant	Pennsylvania.	Ovarian Dropsy.
Morton, Tower D.	Ohio.	Medical Deontology.
Nash, Joseph D.	Pennsylvania.	Diagnosis.
O'Hara, Robert H.	Kentucky.	Inoculability of Constitutional Syphilis.
Ozias, Herman W.	Pennsylvania.	Pneumonia.
Perchment, Peter D.	Pennsylvania.	Intermittent Fever.
Pilsbury, John Milton	Kentucky.	Abortion.
Potts, James F.	Illinois.	Spotted Fever at Whitehall, Illinois.
Raub, Michael W.	Pennsylvania.	Pneumonia.
Rea, Alexander M.	Pennsylvania.	Enteric Fever.
Reichard, Philip L.	Pennsylvania.	Placenta Prævia.
Remondino, Peter Charles	Minnesota.	Syphilitic Lymphadenitis.
Reynolds, Samuel	Pennsylvania.	Scarlatina.
Richards, John C.	Pennsylvania.	Cataract.
Richardson, John B.	Kentucky.	Hydrocele.
Riecker, George A.	New Brunswick.	Hospital Gangrene.
Roberts, Thomas H.	Maryland.	Amenorrhœa.
Robinson, Lemuel A. (M. D.)	Tennessee.	Dyspepsia.
Rodman, William B.	Kentucky.	Disease of the Cæcum and Appendix Cæci.
Roth, Theodore	Pennsylvania.	Wounds.
Ruger, Henry H.	Wisconsin.	Camp Diarrhœa.
Scholfield, David Thorburn	Canada West.	Pneumonia.
Schrack, David, Jr.	Pennsylvania.	The Medical Student.
Seem, Albert A.	Pennsylvania.	Croup.
Shankland, William L.	Missouri.	Spotted Fever.
Sherman, Austin B.	Pennsylvania.	Spotted Fever.
Shrawder, John S.	Pennsylvania.	Lithotomy.
Simmons, John F.	Tennessee.	Rubeola.
Simpson, James	Pennsylvania.	Chemistry in its Relations to Medicine.
Slack, Clarence M.	New Jersey.	The Philosophy of Sleep.
Smith, Henry J.	Kentucky.	The Physician.
Solliday, B. F.	Ohio.	Scarlatina.
Sparks, George W.	New Jersey.	Dreams.
Stewart, Howard P.	Pennsylvania.	Treatment of Malignant Tumors.
Taylor, James	Pennsylvania.	Aneurism of the Aorta.
Throckmorton, William S.	Pennsylvania.	Sulphuric Acid.
Todd, Orrin D.	Kentucky.	Empyema.
Townsend, Step'n (M. D.)	Pennsylvania.	Intermittent Fever.
Vansant, Joseph B.	New Jersey.	Scarlatina.
Vest, John W. H. (M. D.)	Iowa.	Dislocation of the Shoulder-Joint.
Walker, Horace	Kentucky.	Onychia.
Walker, James S.	Kentucky.	Hydrocele.
Wallace, John S.	Pennsylvania.	Intermittent Fever.
Wallingford, Alvin M.	Kentucky.	Acute Dysentery.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Waples, Marshall H.	Iowa.	Professional Policy.
Weaver, Jacob G.	Pennsylvania.	Rheumatism.
Wenrich, William H.	Pennsylvania.	Cell Agency.
Wentz, William J.	Pennsylvania.	Indigestion.
White, Alonzo	Missouri.	Phthisis Pulmonalis.
Wiley, John S.	Wisconsin.	Hernia.
Wilkins, Thomas (M. D.)	Illinois.	Anæsthesia.
Wilson, Charles M.	Pennsylvania.	Circulation.
Wilson, David H. H.	Kentucky.	Nutrition.
Winton, Horace	Indiana.	Vis Medicatrix Naturæ.
Wintter, William	Pennsylvania.	Anthrax.
Wise, Kenneth D.	Indiana.	Milk Sickness.
Witherspoon, Oran H.	Kentucky.	Physical Signs of Acute Pneumonitis.
Zarracino, Ramon D.	Cuba.	Artificial Lactation.
Zell, Amos B.	Pennsylvania.	Scarlatina.

Of the above, there are from—Pennsylvania, 63; Kentucky, 22: Ohio, 6; Missouri, 6; New Jersey, 5; Illinois, 5; Indiana, 5; Tennessee, 4; Rhode Island, 3; Maryland, 3; Iowa, 3; Wisconsin, 2; Canada West, 2; New York, 1; Virginia, 1; W. Virginia, 1; Minnesota, 1; U. S. Navy, 1; New Brunswick, 1; Cuba, 1. Total 136.

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